WORLD OIL

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for the drilling-producing-pipe line industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry

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PLANS AND SPECIFICATIONS

Including as a small but essential part the materials required for the execution of the plan

The preparation of complete plans and specifications precede making a list of materials for the accomplishment of such plans. The material purchased is no more or no less complete or efficient than the plans and specifications. In fact, the plan must precede the decision concerning the material that will be used if the fine individual parts are to operate in a planned procedure.

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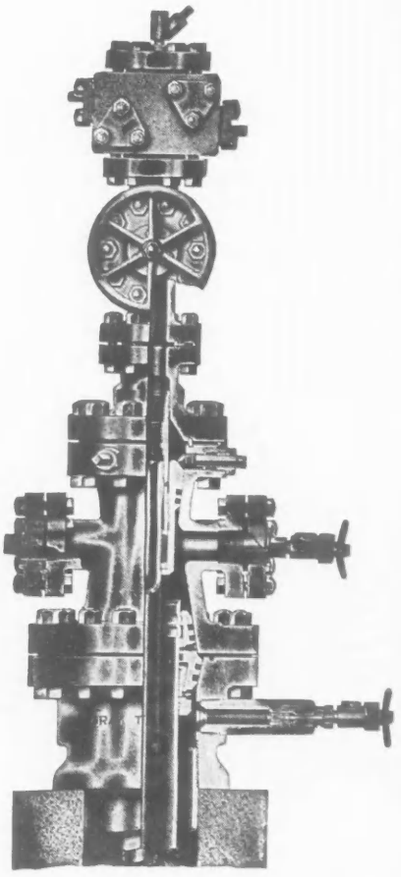

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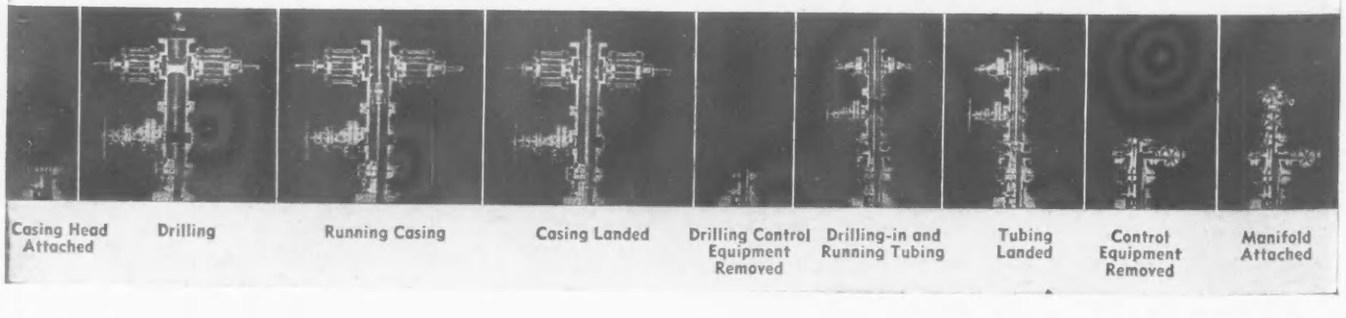

The Change of Name

WITH this issue WORLD OIL becomes the new name for a publication which for more than three decades has served the oil industry under the name *The Oil Weekly*.

Some of the present staff have served on *The Oil Weekly* since its first issue. Many others have served as many as 20 years, giving the publication the kind of loyalty which has made all of us proud to be identified as *Oil Weekly* men.

Naturally all of us who have helped to publish *The Oil Weekly* see the change of names with mixed emotions. We recognize that changing times and trends must be recognized, and we are fully in accord with the reasoning which has taken into consideration the close inter-relation between domestic and foreign affairs. But we, like many of *The Oil Weekly's* subscribers, have developed a fondness for the name itself.

It is our assignment to do an even better editorial job on WORLD OIL than we ever did on *The Oil Weekly*. This is no easy task, but it is one to which we shall devote all our efforts.

There will be no substantial change in editorial content. The new name does not mean that domestic affairs will receive one whit less attention than they have received in the past. There will be, as time goes on, an improvement in the presentation of both domestic and foreign affairs, particularly from the standpoint of interpreting the effect of one upon the other.

And we intend to continue to merit the high regard in which *The Oil Weekly* has been held for so many years.

THE EDITORIAL STAFF.

Output of Penn Grade Controlled by Price

THE price of $4.30 per barrel now posted for Bradford-Allegany crude, following the July 1 raise of 25 cents, recognizes the high quality of the oil, its limited availability, and the high cost of producing it, involving secondary recovery operations. This is an example of price being a definite conservation factor. Price has to be adequate to draw forth oil that otherwise would not be recovered. While it is easy to understand the importance of price in promoting maximum recovery of this choice crude, the same general principle should be recognized as applying to all of the nation's oil fields. In other fields, too, price enters directly into the ultimate recovery economically possible. Inadequate price promotes premature abandonment of wells and loss of potentially recoverable oil, and adequate price encourages maximum recovery.

While present price of Pennsylvania grade is the best since the decade after World War I, it is around the minimum of that era. During that war this crude was stabilized at $4 a barrel —until September 2, 1919. It rose by 25 cent raises to $5 a barrel by the end of 1919 and reached a peak of $6.10 on March 2, 1920. That price held until January 8, 1921. In 1921 the price declined to a low of $2.25 per barrel on June 28, 1921, but it recovered by November 2 to $4 a barrel.

During that period of the first World War there was a scarcity of crude oil, as there has been following the second World War, and at that time the high prices of crude were importantly instrumental in the early application of water flooding at Bradford and Allegany.

Since the Allegany field is in New York State, along with about one seventh of the Bradford field, and since these fields represent most of the state's crude oil production, the production of New York is a good measure of the effect of water flooding. With the benefit of this secondary recovery method, the state's production rose from 809,000 barrels in 1918 to 988,000 barrels in 1921, and thereafter climbed steadily to 3,647,000 barrels in 1930, with benefit of favorable crude prices. The depression and low crude prices then caused several successive years of declining production. As the markets improved, production again increased and with the good prices of 1937 reached a peak of 5,478,000 barrels. Again prices declined and so did production, until the war emergency brought subsidies and expansion of output. The favorable market situation of 1946 was accompanied by an increase in production. The relationship between production and price is very pronounced in the New York production history.

Ad Program Due For Oil Industry

A NATIONWIDE advertising campaign to point out the progressive character of the oil industry will be started late in July. The campaign will run thereafter in Life, Look, Collier's, The Saturday Evening Post and representative trade publications.

The ad drive will tie in closely with the public relations program now being conducted by oil companies throughout the country. It will show that the competition existing among America's 34,000 petroleum companies has resulted in achievements which have contributed immensely to making our standard of living the highest in the world.

The ads, most of which are full page in size, have been designed by leading commercial artists for the purpose of carrying the true story of oil into every American home. They will be something special.

Watch for them and tell your friends about them. Reprints of the ads, for putting on bulletin boards and prominent display spots, are available at reasonable costs.

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Franks sales and engineering staff will, as previously, be on hand to work with oil company or contractor officials and engineering departments in helping them select the most economical units for the job desired.

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THE WEEK'S NEWS

CONGRESS and the Administration are as preoccupied with the oil problem now as at any time during the war, with a half-dozen Congressional committees exploring various phases of the domestic and export situation as the government prepares to clamp down on exports through reimposition of wartime controls. Story below.

Oil Pact Approved with Reservations—The Senate Foreign Relations Committee has approved the reservation-hedged Anglo-American petroleum agreement, but whether it will be ratified this session is still doubtful. Page 30.

July Demand for Crude Oil Boosted—The Bureau of Mines forecast of July demand for domestic crude tops 5,000,000 barrels daily, with indications that production activities may soon overtake refinery capacities. Page 30.

House Approves Gas Act Amendment—Amendment of the Natural Gas Act has been approved by the House Interstate Commerce Committee and may be enacted into law before adjournment, despite charges by the Federal Power Commission that it will make more confusing the present confusion. Page 28.

API May Study Marketing Problems—A committee to consider advisability of a study of marketing functions and costs, with special reference to problems of independent companies was authorized last week at a meeting of the API marketing division in Minneapolis. Page 31.

New Mexico-Oklahoma Line to Start—Initial delivery of pipe for the construction of a 515-mile crude carrier from Jal, N. M., across West and North Texas, to Cushing, Okla., is scheduled for September. Page 31.

Future of OGD Still Studied—With the House refusing to accept the Senate's provision of additional funds for operation of the Oil and Gas Division, it may be July 15 before conferees of the two houses agree on the future of the agency.

Co-op Tax Hearing Set July 21—Hearings on the tax advantages of cooperatives and certain other organizations have been officially scheduled to open before the House Ways and Means Committee July 21. With more than 200 applications for time before it, the committee will require that there be no duplication of testimony so that it may conclude the hearings in the five days allotted for them.

Ball Defends Oil Industry As Congress Conducts Hearings on Supply Situation

The domestic oil supply situation last week easily took top billing in Congress, with House and Senate committees competing between themselves in investigating its causes.

With the House Merchant Marine Committee threatening to get into the picture through the back-door approach of a probe of exports to Russia, and one Senate committee investigation scheduled and another being sought, the House Interstate and Foreign Commerce Committee, in defense of its jurisdiction over oil, gave 24 hours notice of a hearing at which Max W. Ball, director OGD, staunchly defended the industry as performing a miracle by expanding refinery production beyond any former concept of capacity.

But Ball admitted that the Middle West is in for a tough time next winter, with cold homes and uncooked food more than possibilities unless every factor on which adequacy of supply depends works in favor of the public.

Spot Shortages Explained

Ball explained in detail why the country faces spot shortages or worse of gasoline, liquefied petroleum gas and burning oils. The U. S. today, he said, is consuming more oil than the whole world did before the war—5,498,000 barrels daily in the first quarter of this year with the average for 1947 now estimated at 5,733,000 barrels daily. Production, which was 4,063,000 barrels daily in 1941, will average 5,287,000 barrels daily this year.

Because of the lack of steel, Ball said, refinery capacity has not been materially expanded, but refinery output has been boosted greatly.

"The industry has at no time and in no sense laid down on its job," he told the committee. That is shown by drilling activity which will bring in about 30,000 wells this year of which 5035 will be wildcats, he added, but the peaks reached in 1937 and 1941 will not be equalled for some time because of the wider spacing which was developed during the war.

Ball explained there are no exact figures now of crude availability, but except for a few areas, notably the Permian Basin in West Texas and eastern New Mexico, operating fields are working at maximum effective rates and in some instances, notably California, above those rates.

The Caribbean area also is being worked at maximum efficiency, he said, and the U. S. cannot look to those fields for additional oil. Only in the Middle East is there excess capacity, and new lines to carry oil to refineries or ports would be necessary if production is to be stepped up materially.

Basically, Ball declared, the situation is the result of a lack of steel for pipe lines, refinery equipment, new wells and tank cars. Badly needed are 9000 new tank cars, but present production is only between 100 and 150 a month, and while it is hoped to boost output to 200 a month before July 31 and to 500 a month before the end of the year, the situation will be remedied only slowly.

Only about one-eighth of one percent of our production is being exported, Ball said in discussing the recent publicity of Russian purchases. Last year Canada was our largest customer, taking about 35 percent of exports, followed by the United Kingdom with 30 percent and France with eight percent, while Russia took 1.5 percent.

This year, he said, the U. S. will be a net importer of oil on balance, with imports running about 482,000 barrels daily and exports a little over 400,000.

Ball told the committee that as a geologist he is confident there is a lot of oil yet to be found in this country, although he admitted the rate of finding probably would not keep pace with demand.

Further, he said, the idea that the war depleted our reserves is inaccurate since study of the demand curve shows that wartime consumption was not out of line with what would have been required to meet increasing market requirements.

Situation Is Precarious

Questioned by Representative Carl Hinshaw of California as to our situation in the event another war hit in the near future, Ball admitted it would be very precarious "because we have virtually no excess productive capacity and there is very little anywhere in the western hemisphere. We would have to restrict civilian consumption very severely and would have to go in and try hard and fast to develop additional supplies in the Caribbean area."

Asked by Congressman John W. Heselton of Massachusetts what the government can do to help relieve the siutation, Ball said everything has been done that could be in view of the lack of wartime authority to take direct action. In the last analysis, he said, it is a problem for the industry, and one he is confident it will meet successfully.

An optimistic view of the over-all situation was taken by John W. Boatwright of Standard Oil Company (Indiana), who told the committee that if present refinery operations can be continued without interruption the present tight gasoline situation will begin to ease up in a few months. There is no threat of a shortage of basic raw materials for the manufacture of petroleum products, he said, and the problems to be licked are those of getting excess production to idle refineries and of getting products to consuming markets.

The committee suspended further hearings until July 8, when it will receive the views of officials of the Army-Navy Petroleum Board and the State Department.

Also in the offing, to open July 14, is

an investigation of the supply situation announced by Senator George W. Malone of Nevada, chairman of a Public Lands subcommittee, at which representatives of producers, refiners and distributors will be called.

Malone said that the inquiry would go into the shortages of steel and their effects upon transportation facilities, with special reference to "the causes for the decline in the ability of the country's transportation system to carry oil in comparison with the war years."

Other subjects to be taken up will include the industry's productive, refining and distribution capacity; the transportation equipment required to move existing and anticipated oil requirements; the effects of strikes in the coal and steel industries, as well as the oil industry itself, upon production and distribution of oil, and the factors retarding the investment of venture capital in the industry.

500 Geological Radio Licenses Issued by FCC

More than 500 geological radio licenses are held by oil companies and geophysical exploration agencies for use in searching for underground and underwater oil deposits, and one geophysical exploration company is experimenting with the war-developed radar in the Gulf of Mexico tidelands, it is disclosed by a report of the Federal Communications Commission.

The use of radio in oil exploration has increased tremendously since 1935 when there were only 131 such stations, the commission said, attributing the development to the drain on readily available deposits and the necessity of seeking new fields.

The 500 licenses which have been issued cover more than that number of units, since a single authorization can include various mobile and portable units.

Munitions Board May Set National Rubber Policy

Specific recommendations for a permanent national rubber policy are expected to be made by the Army-Navy Munitions Board this week at a closed meeting of the House Armed Services Committee.

A paramount objective of the board's recommendations, prepared after months of study of military aspects of the rubber problem, is believed to be the maintenance in this country of a substantial synthetic rubber industry, with output sufficient to prevent a debacle should supplies from the Far East again be cut off as they were in 1942.

AIME to Tour Steel Plant

Fabrication and manufacture of steel products will be the highlights of a scheduled tour of the Gulf Coast Section, AIME, when members and guests of the section visit the Sheffield Steel Corporation's plant in Houston July 8.

Rizley Bill Amending Natural Gas Act Due for Action in Congress This Week

The Rizley bill amending the Natural Gas Act, approved by the House Interstate and Foreign Commerce Committee, will go before the House for approval this week and stands a good chance of being enacted into law before the end of the session.

The measure was amended in several respects by the committee and, to speed up action, Representative Ross Rizley of Oklahoma introduced the amended legislation as a new measure, which was given the approval of the committee, thus preventing the necessity of securing acceptance of the amendments on the House floor.

The bill as it will be reported this week provides for the exemption of independent producers and gatherers, at one end, and local distributing companies at the other end of interstate pipe lines, and contains Rizley's original provisions covering control of field prices and granting the original cost-depreciated cost option. In dealing with the exemption of producers and gatherers, the committee rejected wording suggested by the FPC.

The most important changes in the bill were the dropping of the specific prohibition against end-use control by the FPC and the elimination of the proposed speeded up procedure. These deletions, gas industry spokesmen said, will "take the heat out" of the opposition offered the bill by the railroad and coal interests, who particularly objected to those provisions, and will make passage easier.

The committee wrote into the measure provisions assuring local distributors will get adequate service, thus allaying the fears of municipal officials who, at hearings on the measure, expressed apprehension that it would permit pipe line companies to switch deliveries from one community to another where it best suited their purposes; provided an exemption from the law for companies taking gas from interstate pipe lines at state borders for resale to local distributing companies within the state, and granted permission for pipe line companies to operate as common carriers, if they wish, and apply to the ICC for such operation.

As the House committee acted, the Senate subcommittee in charge of the bill wound up hearings and prepared also to pass the measure along. It is expected, however, that Senate action will await passage of the revised bill by the House so as to obviate the passage of a different measure in the upper chamber, which would necessitate sending the matter to a conference committee to iron out the differences.

In a letter to Wolverton, FPC Chairman Nelson Lee Smith excoriated the committee's bill, which he said was poorly written, and offered to submit "refinements of language."

Section by section, Smith pointed out where the amendments are "unclear and confusing" and possibly may lead to unanticipated undesirable effects.

Smith again charged the committee had been stampeded into hasty action when it could have done a better job by awaiting submitting of the FPC report on its natural gas investigation.

Federal Officials Study Tidelands Policy Problem

Interior and Justice officials are struggling with the problem of federal policy with respect to the California tidelands, held last month by the Supreme Court to belong to the federal government, while at the Capitol there is great uncertainty as to the best approach to the return of title to the state.

The two departments reportedly were ready to announce their future course as soon as the court acted, but the decision is said to have been so sweeping as to necessitate a new study from the angle of the possibilities of its future application to the underwater lands of other states.

Similarly, legislation was drafted to return title to the state but here, again, there is some question whether it is adequate to cover the court decision, and, also, whether it could be enacted over a Presidential veto.

As a result of the decision, Congress must decide whether to surrender federal claims to the offshore lands or provide for a new relationship between the federal and state governments with respect to such properties with control in the former of underwater oil and other resources.

Administration officials are said to lean to the idea of making a naval petroleum reserve out of such of the California oil bearing tidelands as are not now being exploited, but it is expected any action along that line will be deferred until the next session of Congress.

Steel Industry Outlook Uncertain as Work Slowed

Failure of coal operators and United Mine Workers to reach an agreement under which full-scale coal production can be resumed quickly will find the steel industry "flat on its back" by the end of this month, according to industry spokesmen.

With only a month's supply of coal above ground when the miners began their ten-day vacation June 27, the steel industry is far more vulnerable than it was when miners walked out last year, it was stated. The first week of the stoppage of mining found the industry's output down 20 percent from the preceding week.

By the end of the month, if coal production is not resumed, it was said, the industry will be somewhere around 50 percent of capacity or less, representing a loss of more than 800,000 tons of steel a week to consumers.

OIT Sets Up Regulations for Export Of Oil Products to Foreign Nations

Exports of aviation and other motor fuel and gasoline, kerosine, gas oil and distillate and residual fuel oil in excess of $1000 in value, and blending agents or anti-knock compounds of petroleum origin in excess of $100 require licenses for shipment to any foreign destination except Canada, under regulations of the Office of International Trade.

Applicants for export licenses must state the proposed port of shipment and must disclose their total exportations during the 12 months beginning July 1, 1946, of each product to each destination for which application is submitted.

Quotas are Studied

OIT officials are studying the quotas to be set up for export oil, but probably will not be in a position to make decisions for some days. The plan, it was explained, is to develop quotas by countries covering a period of two or three months or perhaps longer, in recognition of the time required by exporters to arrange for tankers.

A special quota will be set up for exporters not heretofore engaged in foreign trade and therefore unable to furnish figures on exports during the 12 months ended June 30.

Reimposition of export control was ordered by OIT in recognition of Congressional pressure activated less by the export of oil than by the fact that some was being shipped to Russia. OIT officials did not want export control, saw no necessity for it, but realized that if they didn't act Congress would.

Even as control officials coped with the problem of quotas, Congressional investigations of the oil situation piled up. Late last month, Senator Owen Brewster of Maine urged an all-out investigation of the joint domestic-export situation, if possible to be linked to his probe of Aramco Middle East oil sales to the Navy, and Representative Alvin F. Weichel of Ohio, author of legislation to require War, Navy and Commerce Department approval of oil exports, threw his House Merchant Marine Committee into an investigation.

Weichel's committee was told by A-NPB officials of the problems involved in securing military requirements, with the comment also that no relief was in sight despite the NPC committee report of last month.

Robert Friedman, acting director of the OGD, attributed present and prospective difficulties to the "steel straightjacket" which is restricting the construction of pipe lines, tank cars, tubular goods and refining facilities. Asked by Weichel why the government had permitted 191 million barrels of oil to be exported since January 1, 1946, he pointed out the advantages of such shipments to the industry which thus is enabled to maintain excess refining capacity valuable in the event of war.

Casper Selected as Site Of Rocky Mountain Parley

The fall meeting of the Rocky Mountain Oil & Gas Association will be held in Casper, Wyo., September 10 and 11, it was decided at the midyear meeting of the association directors at Yellowstone Park. Senator E. V. Robertson of Wyoming will be the principal speaker.

Among resolutions adopted was one endorsing the Moore-Rizley bill to amend the Natural Gas Act.

Jake L. Hamon, vice president, division of production, American Petroleum Institute, addressed both the RMOGA and the API Rocky Mountain district meeting.

H. A. Stewart, Rocky Mountain manager, The Texas Company, was named chairman of the API Rocky Mountain district. Other officers are J. D. Anderson, Ohio Oil Company, vice chairman for Wyoming; R. D. Smith, Union Oil Company, vice chairman for Montana; M. R. McArthur, Husky Refining Company, vice chairman-at-large; Zack Brinkerhoff, Casper, Wyo., secretary-treasurer, and R. B. Curran, Carter Oil Company, advisory committeeman.

Crude Oil Production in the United States

(Estimates compiled by WORLD OIL. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED July 5	June 28
Alabama	1,150	1,150
Arkansas	76,000	76,250
California	919,800	921,600
Colorado	39,750	39,650
Florida	1,200	1,025
Illinois	183,100	187,000
Indiana	18,000	18,100
Kansas	290,600	288,600
Kentucky	26,750	26,500
Louisiana	420,000	418,350
North Louisiana	96,800	96,950
South Louisiana	323,200	321,400
Michigan	44,000	43,500
Mississippi	96,800	98,050
Missouri	100	100
Montana	25,000	25,150
Nebraska	600	550
New Mexico	107,700	106,450
New York	13,200	13,050
Ohio	8,600	8,800
Oklahoma	388,250	387,500
Pennsylvania	34,600	34,300
Tennessee	25	25
Texas	2,251,875	2,288,950
Tex. R. R. Comm. Districts:		
Dist. 1—South Central	22,075	21,650
Dist. 2—Middle Gulf Coast	164,725	166,550
Dist. 3—Upper Gulf Coast	486,025	494,475
Dist. 4—Lower Gulf-S.W.	244,250	247,725
Dist. 5—East Central	39,500	39,950
Dist. 6—East Texas Field	328,275	334,000
Dist. 6—Rest of Northeast	114,550	116,100
Dist. 7-B—North Central	38,125	39,500
Dist. 7-C—West Central	38,900	39,000
Dist. 8—West	557,600	560,750
Dist. 9—North	132,350	141,500
Dist. 10—Panhandle	85,500	87,750
Virginia	200	200
West Virginia	7,500	7,600
Wyoming	121,000	122,000
Total United States	5,075,800	5,114,450

Porter Charges Federal Control of Oil Sought

The State and Interior Departments of the United States Government last week were charged by H. J. Porter, president of the Texas Independent Producers and Royalty Owners Association, of using every means to put the oil industry under federal control. The Anglo-American treaty, the tidelands suit and the tubular goods scarcity were all said to be a part of this general scheme. Porter asserted these departments were using every opportunity to falsely excite the people about this country's supply of petroleum, even deliberately attempting to create a petroleum shortage by permitting entirely too large a part of the nation's tubular goods to be shipped abroad.

Pointing out that about 7 percent of the tubular goods being manufactured in this country is being shipped abroad, Porter said this volume could be used to greater advantage in this country. Porter stated that a survey of Texas independent operators, to which only 142 operators reported, showed this group had 1295 proved locations that could not be drilled for lack of necessary pipe. It was estimated these wells would result in a daily production of 73,612 barrels, and require only 9,750,640 feet of casing. In addition, these same operators reported they had 531 projected wildcats awaiting pipe.

Porter denied there was any shortage of crude oil, stating production is the highest in history and an additional 175,000 barrels could be produced daily. The cause of gasoline rationing in some parts of the country, he said, was due entirely to lack of sufficient pipe line facilities, which cannot be cured because of the tubular goods shortage.

Definitely voicing opposition to any international oil treaty or agreement of any kind, Porter declared such plans would result in the allocation of world markets on a reserve basis and this necessarily meant United States crude oil production would be cut. Texas, he said, might lose one million barrels per day. Warning that this country cannot depend upon foreign oil sources because of inability to deliver it where needed during times of war, Porter asserted the way to provide an ample and usable supply was to maintain a competitive, healthy and expanding domestic industry.

Plymouth Field Recycling

Permission to recycle the middle Magnolia gas sand in the Plymouth field, San Patricio County, was granted Plymouth Oil Company, Heep Oil Corporation, and Conroe Drilling Company in an order issued by the Texas Railroad Commission last week. The commission found this sand involves some 2454 surface acres and averages 10 feet in thickness. Distillate recovery through a separator is calculated at 11.8 barrels per million cubic feet as compared to 33.55 barrels through cycling, for total estimated recoveries of 389,000 and 886,000 barrels respectively.

Mines Bureau Forecasts July Domestic Oil Demand at 5 Million Barrels Daily

Demand for domestic crude petroleum this month will top 5 million barrels daily, it was forecast last week by the Bureau of Mines.

Estimating that demand at 5,020,000 barrels, an increase of 60,000 barrels over the forecast for June, the Bureau points out the total demand for all oils through the first quarter of this year averaged 5,870,000 barrels daily, compared with 5,248,000 barrels daily for the same period in 1946, an increase of almost 12 percent, and emphasized that if the potential demand for the balance of the year is to be met, refinery and transportation facilities must be operated at capacity levels.

The July forecast was based on estimates of a total demand for 76,100,000 barrels of motor fuels; total crude runs to stills of 5,020,000 barrels daily; a demand for domestic crude for exports, fuel and losses balancing imports of foreign crude, and a yield of gasoline from crude oil of about 42 percent for the third quarter in view of the fact that the unusual decline in stocks of finished gasoline during the second quarter offset the seasonal increase during the winter months.

The Bureau anticipated crude runs to stills in the third quarter may top the record of 5,001,000 barrels daily reached in July, 1945, it estimating that second-quarter runs were about 4,900,000 barrels daily. Estimates of maximum possible sustained runs range between 5 million and 5,100,000 barrels daily, allowing for refineries that cannot operate at capacity due to location or difficulties in obtaining crude, it said.

In calculating July demand on the various states, the Bureau raised the production figures in 10, lowered them in three and left the remainder unchanged.

The bulk of the increase will come in Texas, where the Bureau upped its forecast from 2,155,000 barrels daily in June to 2,190,000 barrels daily. Increases also were listed for California, 884,000 to 900,000 barrels; Louisiana, 418,000 to 425,000; Oklahoma, 385,000 to 390,000; Kansas, 280,000 to 290,000; Wyoming, 114,000 to 118,000; New Mexico, 103,000 to 104,000; Mississippi, 87,000 to 90,000; Arkansas, 79,000 to 80,000, and Colorado, 40,000 to 42,000.

Reductions were estimated in Illinois, 210,000 to 208,000 barrels; Michigan, 46,000 to 45,000, and Kentucky, 29,000 to 28,000. Unchanged were Pennsylvania, 36,000 barrels; Montana, 24,000; Indiana, 18,000; New York, 13,200; Ohio, 8200; West Virginia, 8000; Nebraska, 600, and "others," 2000.

Congress Asked to Rectify Opinion in Tidelands Case

The Interstate Oil Compact Commission has asked Congress to take steps immediately to rectify the recent opinion by the Supreme Court of the United States in the California tidelands case.

L. D. Ransom, secretary to Texas' Governor Beauford Jester, who attended the meeting as the governor's representative, in a report last week said the resolution called the decision of the court holding that California's coastal lands belong to the federal government rather than the state, an "invasion of state's rights."

Meanwhile, the Texas School Land Board met in Austin to go ahead with plans for leasing tidelands in the Gulf of Mexico, along with other lands over the state. The date for the sale was set for the first Tuesday in November. Bascom Giles, commissioner of the General Land Office and member of the School Land Board, predicted, on the basis of indications at present, that the sale will be the largest ever held in Texas. He was amused over reports that 15 Middle West oil cooperatives have asked the federal government for permission to develop Texas and Louisiana tidelands, instead of going to the states.

Anglo-American Oil Pact Approved by Senate Group

With only Senator Tom Connally of Texas voting "no," the Senate Foreign Relations Committee last week approved the Anglo-American Petroleum Agreement.

Whether the pact would be brought up on the Senate floor for ratification before Congress adjourns, remained uncertain.

In approving the agreement and on the basis of the long hearings last month, the committee wrote into it both the API reservations and two additional ones prepared by Chairman Arthur Vandenberg of Michigan, all designed to protect the domestic industry.

Those amendments make it clear that neither the government nor Congress will derive from the pact any powers additional to those now possessed, that either signatory may impose tariffs or quotas on oil imports, that the proposed international commission shall have no authority over domestic oil controls, that Congress shall not encroach upon the states' regulatory powers, and that existing international concessions, agreements and contracts shall not be affected.

While the committee has approved the agreement, Vandenberg said it would not be given any priority in the Senate but that it might be taken up before adjournment, now scheduled for July 26.

State Department officials apparently do not anticipate any great difficulty in securing British acceptance of the revised agreement. The reservations, a spokesman for the department said, are entirely satisfactory, none of them changing the basic purposes of the pact but merely giving emphasis to the protection of the domestic industry, which the American negotiators themselves sought to achieve.

Daily Oil Flow in April Boosted to New Record

Daily average domestic crude production reached a new record of 4,974,000 barrels in April, 66,000 barrels above March and 52,000 barrels over the previous July, 1946, high, it is disclosed by the monthly report of the Bureau of Mines.

At the same time, demand for domestic crude declined 56,000 barrels to 4,725,000 daily, permitting an increase for the third successive month in stocks which, at the close of April, were 241,663,000 barrels, domestic and foreign, against 234,980,000 barrels March 31.

Shut-downs and fire losses were reflected in refinery operations in April, when crude runs to stills declined to 4,707,000 barrels daily compared with 4,843,000 in March, necessitating withdrawals from stocks, which dropped 5,700,000 barrels during the month, of which 5,000,000 barrels was an unusual seasonal decline in finished gasoline, the Bureau reported.

The Bureau found also that for the first time in several months exports exceeded imports.

The Bureau's monthly tabulation of supply and demand showed that domestic crude production totaled 149,228,000 barrels in April against 152,160,000 in March and, with 10,753,000 barrels of natural gasoline, etc. against 10,953,000, and 50,000 barrels of benzol against 80,000, gave a total production of 160,031,000 barrels against 163,193,000. Imports included 7,276,000 barrels of crude against 9,263,000, and 5,913,000 barrels of refined products against 6,146,000, making the total new supply, all oils, 173,220,000 barrels against 178,602,000.

Total demand for the month was 171,918,000 barrels against 179,891,000 in March, including exports of 3,842,000 barrels of crude against 3,424,000 and 11,248,000 barrels of refined products against 10,754,000 and domestic demand as follows:

Motor fuel, 64,140,000 barrels against 59,947,000; kerosine, 8,082,000 against 10,078,000; distillate fuel oil, 21,321,000 against 29,279,000; residual fuel oil, 42,149,000 against 45,852,000; lubricating oil, 3,066,000 against 2,929,000; wax, 225,000 against 222,000; coke, 792,000 against 843,000; asphalt, 3,027,000 against 2,498,000; road oil, 242,000 against 194,000; still gas, 6,839,000 against 7,124,000; liquefied gases, 4,054,000 against 4,818,000; other miscellaneous, 368,000 against 397,000, and losses 2,532,000 against 1,532,000.

Stocks at the close of the month included 235,710,000 barrels of gasoline-bearing crude against 228,981,000 barrels March 31; 5,953,000 barrels of heavy California crude against 5,999,000; 5,604,000 natural gasoline, etc., against 5,265,000, and 235,303,000 refined products against 241,023,000, a total of 482,570,000 barrels (84 days' supply) against 481,268,000 barrels (83 days' supply).

The Bureau of Labor Statistics price index for crude and products was 86.3 in April compared with 81.7 in March and 62.8 in April, 1946. The crude capacity represented in the report was 5,003,000 barrels daily, indicating an operating ratio of 94 percent, unchanged from March.

Allowables in 75 Texas Oil Fields Cut by Rail Board

The Texas Railroad Commission last week trimmed 60,687 barrels daily allowable from schedules of 75 fields effective July 1, to bring their flow within maximum efficient rates of production. Since the MERs, as determined by a recent statewide survey, are on a calendar day basis, the fields were added to the list of those exempt from shut-down days. The allowable for the Page field in West Central Texas remains the same; however, it also was added to the exempt list.

Proposed New Mexico-Oklahoma Line Slated to Get Under Way in September

Initial delivery of pipe for the construction of a combination of 515 miles of 20- and 24-inch crude carrier from Jal, N. M., across West and North Texas to Cushing, Okla., has been scheduled for September with completion date tentatively set for the third quarter of 1948. This project will have a starting capacity of 144,000 barrels of crude daily, using stations at Jal, Wink, Midland and Wichita Falls.

It was originally projected early last fall by the Texas Pipe Line Company, then revised to include Shell Pipe Line Corporation and Empire Pipe Line Company as participants. Sinclair Refining Company, pipe line division, has joined the group as an interest owner. The participating companies will share the cost of the line, stations, tankage and additional gathering systems that may be built to supplement existing lines that will become available, on a basis of space allocated. Each will designate a representative to the management committee, which will have charge of the construction and operations.

Specifications for contractors' bids to lay the line and erect stations are due to be released within 60 days. The carrier will consist of 20 miles of 20-inch from Jal, which will be an important receiving point for crude gatherings by the Texas New Mexico Pipe Line Company from fields in Eddy and Lea counties, N. M., and Andrews County, Texas, and by Shell Pipe Line Corporation, to Wink, Texas. All trunk lines serving the Permian Basin will be crossed, or reasonably close, in laying 69 miles of 20-inch from Wink to Midland. The Midland-Wichita Falls unit will consist of 253 miles of 22-inch pipe. The Wichita Falls area will be an important source of crude for some of the participating companies, and for this reason the capacity will be stepped up to 24-inch pipe.

Crude shipments from the Texas Panhandle will also be available at Wichita Falls for the big carrier since the Texas Pipe Line Company operates a direct connection. The lines from Wichita Falls to Cushing will require 173 miles of pipe. The carrier will terminate at the Texas-Empire Pipe Line Company's Cushing tank farm and mainline station. A point readily accessible to the Mid-Continent systems of Shell and Sinclair.

Ample crude is available for this new Permian Basin outlet to operate at capacity load upon completion. The capacity from West Texas to Wichita Falls can be stepped up to 218,000 barrels daily by the addition of 2 intermediate stations between Midland and Wichita Falls, while a single station between Wichita Falls and Cushing will boost the 24-inch unit to 241,000 barrels daily.

The Jal station will consist of diesel engine powered centrifugal pumps, while the others will utilize electric motor-driven centrifugal pumps. The Texas Pipe Line Company will be allocated 65,000 barrels daily of the initial capacity, Shell will have 50,000 barrels daily, while Sinclair and Empire will have 15,000 barrels and 14,000 barrels daily, respectively.

Stanolind Authorizes Line From Post to Slaughter

Stanolind Pipe Line Company has authorized the immediate construction of 70 miles of 6-inch crude line from the Post area, Garza County, West Texas, to Slaughter field station on its 16-inch trunk line to Drumright, Okla. The line will be in service before the end of the year.

Stanolind has contracted for the purchase of the field gathering lines of the Scurlock Oil Company, which has been providing the sole outlet for the field, and nearby PHD and Spraberry fields, by tank car shipments since December, 1945.

Scurlock loaded an average of 4600 barrels daily the past week. Stanolind is seeking 3-year crude purchase contracts from producers. Crude in the Post area averages 35-gravity, and contains a nominal sulphur content.

United to Build Gas Carrier From Carthage to Longview

United Gas Pipe Line Company has asked for authority to build a 33-mile 20-inch pipe line from Carthage field to Longview, Texas, at a cost of $1,730,000, to improve delivery capacity in the Dallas district, compensating for a decline in delivery capacity from the Willow Springs and Hawkins fields. Pipe has been ordered for the project, with delivery promised in August.

Rail Shipments of Crude From West Texas Rises

Rail shipments of crude from 7 loading points in West Texas and New Mexico averaged 60,100 barrels daily during the week ending June 22. This compares with 59,650 barrels daily the previous week.

Humble Oil & Refining Company, the largest shipper in averaging 26,450 barrels daily, has abandoned plans to move 50,000 barrels daily through inability to obtain the required tank cars, and will attempt to maintain a schedule of 35,000 barrels daily in July to supplement 124,000 daily runs from the Permian Basin by Humble Pipe Line Company's 2 trunk line systems.

Shell Firm Extends Low Texas Crude Oil Tariff

Although authorized to reinstate a 10-cent per barrel trunk line tariff from the East Texas field to Houston effective July 1 (*The Oil Weekly*, June 30), Shell Pipe Line Corporation has extended its 7½ cents per barrel tariff rate to January 1, 1948.

Marketing Problems May Be Studied by API Group

A committee to consider advisability of a study of marketing functions and costs, with special reference to problems of independent companies, was authorized last week at a meeting of the marketing division of the American Petroleum Institute in Minneapolis.

The independents' problems was brought to the attention of the delegates in a talk by Gordon Duke, president, National Council of Independent Petroleum Associations, in which he said jobbers would be forced to turn to Washington for assistance if the industry does not solve its own problems.

Walter S. Hallanan, chairman, National Petroleum Council, told the delegates "there is no over-all shortage of oil or its products, and none in prospect."

"Our production and refining facilities, although being strained to the utmost, are adequate to meet the present rate of consumption and any reasonable anticipated growth in demand," Hallanan said. "I am conscious that we must face the reality of probable local and temporary shortages of some products in certain localities. While our production and processing facilities are adequate, the immediate difficulty lies in distribution of products to the right places at the right time. This is a condition which may develop over the next 6 to 12 months."

Hallanan said that the oil industry has not escaped the maladjustment of world economy.

"The dislocations which came in the wake of the most frightful and destructive war in human history have brought serious problems to our door. We are called upon to meet a record demand for petroleum products at a time when dislocations in other industries make it impossible for us to obtain essential materials for the necessary expansion of facilities to put our house in order," Hallanan said.

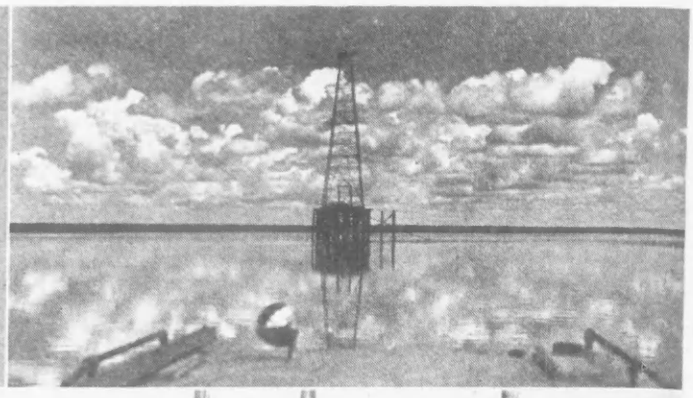
Meanwhile, Eugene Holman, president, Standard Oil Company (New Jersey) also voiced the opinion at the meeting that "there is no basic shortage of petroleum." (See page 44.)

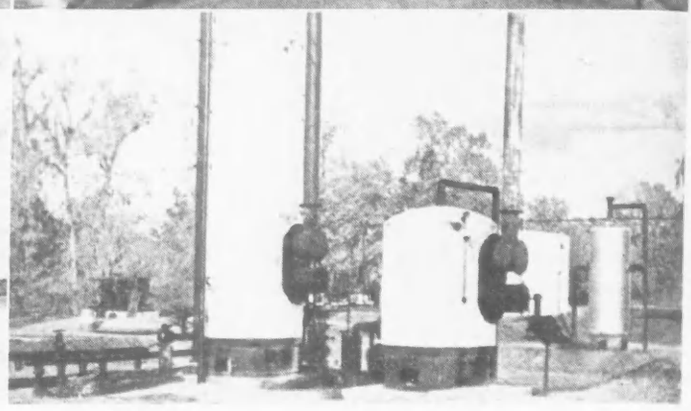
"The shortages we are talking about result from the industry's difficulty in closing a small but significant gap between a record supply of petroleum products and a record demand for them," Holman said. "That gap, in my opinion, will be closed."

Hunt Erecting Car Rack To Handle Whelan Crude

Hunt Oil Company is erecting a 4-car capacity rack on the Texas Pacific Railroad at Marshall, Texas, to load 20,000 barrels monthly production of condensate produced in the nearby Whelan field, Harrison County, for consignment to a Canadian refinery. This production has been marketed by tank trucks to the Arkansas Gas Company, which paid $1.95 per barrel posted price and 30 cents per barrel trucking fee.

Oil Production By Remote Control





Top right: The Carter Oil Company et al Catahoula Lake Well A-1. Lower left: Well servicing at Catahoula. Lower right: The heater treater and separator, with triplex pump in left background, prior to the construction of the sub-structures.

By W. S. STOVALL, JR.
The Carter Oil Company, Shreveport, Louisiana

PRODUCTION engineers in charge of The Carter Oil Company's operations in the Catahoula Lake pool of LaSalle Parish, Louisiana, have evolved a system of well operation from shore which eliminates daily visits of the pumper and has resulted in keeping the producers on steady production despite wind and weather problems which formerly were resulting in costly shutdowns.

The pool was discovered in February, 1942, in approximately the center of Catahoula Lake, and is being drained by five producers owned jointly by Carter and Phillips Petroleum Company. During the drilling stage the fluctuating water level in the lake presented difficult problems, which were carried over into the operating phase.

Flood-Water Accumulation

The lake is a natural accumulation of flood waters from the Little, Ouachita, and Tensas rivers. High water in these rivers or the rivers into which they empty causes excess water to flow into the lake. The lake bed itself is approximately 13½ miles long and four miles across at the widest point, with an approximate elevation of 27 feet above mean sea level. The depth of the water varies from a few inches to as much as 25 to 30 feet during each year. During the low water months, usually August through November, the lake is a veritable marsh, with a few inches of water and several feet of mud prohibiting boat or vehicle transportation and making walking extremely difficult. During the rainy season, generally January through May, the water varies in depth from 15 feet to 25 feet, with extremely wet years showing as much as 30 to 35 feet. Storm conditions on the lake during the high water season often make navigation hazardous for periods of several days. The fluctuating water level and the hazards involved in navigation of the lake during the storm season presented serious operating problems during the early life of the field, especially after the discovery well required artificial lift.

A REMOTE control system successfully operates five producers several miles out in Catahoula Lake. Before installing subsurface hydraulic pumping units in the wells, and pumping and other producing accessories on shore, operator was experiencing considerable down time and consequent production losses caused by necessity of daily trips to the wells. Storms during high water periods made such trips hazardous while marshy lake bottom during the dry season made them difficult and sometimes impossible.

Five Successful Completions

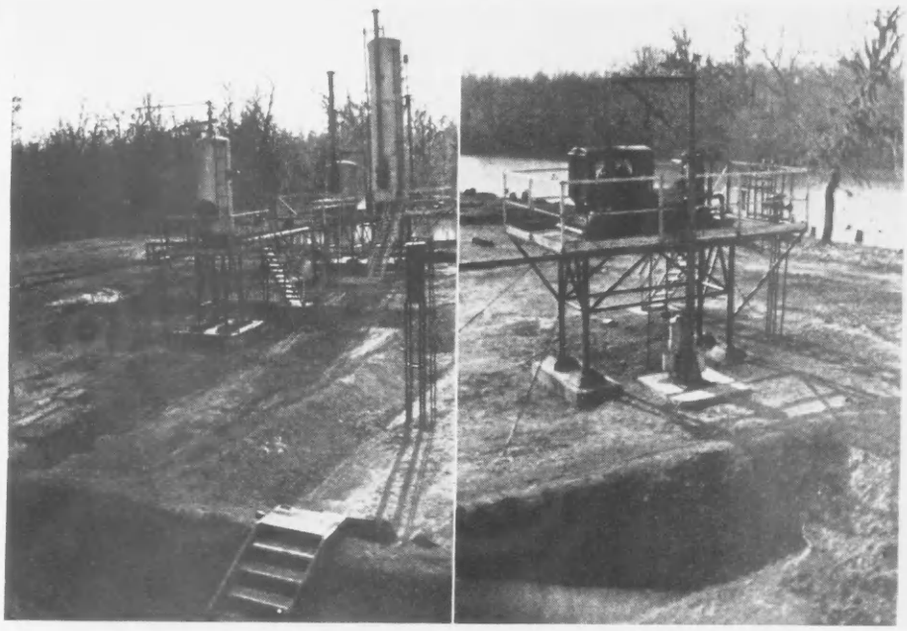
The wells in the pool produce from several sand lenses in the Eocene Wilcox zone at approximately 4000 feet. All wells were drilled from piling foundations, the piles being driven 45 to 50 feet below the bottom of the lake and capped for the derrick floor approximately 30 feet above the lake bed. All drilling operations were confined to the late spring and early winter months when there was sufficient water in the lake to allow marine transportation but not enough to approach the derrick floors. Nine wells were drilled in the pool, five being successfully completed. Rather than construct individual batteries on piling foundations at the wells the

tank battery for all five wells was located on the south shore of the lake approximately 1½ miles from the nearest well. A single 2½ to 3-inch welded flow line laid on the lake bottom serves all wells and has a total over-all length of approximately 17,200 feet. The unit allowable set by the Department of Conservation for these wells is 128 barrels of oil. All wells make their allowable by flow or pump.

The initial well, Catahoula Lake 1-A, required artificial lift in April, 1942, immediately after completion and a standard beam pumping unit was installed. Operating experience gained through the pumping of the well from this time until April, 1944, was sufficient to show that the beam pump was unsatisfactory for this particular type of operation. During the low water seasons of 1942 and 1943, the pumper was unable to make his daily visits to the location to service and make minor repairs to the unit and engine and, consequently, the well could not be kept in operation during this period. Additional down time was suffered during storm periods for the same reason. The vibration set up by the beam pumping equipment caused the piling foundation to become loose in two years' time and presented the problem of further bracing of the piling for continued beam pump operation. Therefore, when two additional wells began to fail in early 1944, other methods of artificial lift were investigated. A subsurface hydraulic pumping installation was installed and by May, 1944, pumps were operating in three wells with the surface controls located on the lake shore adjacent to the tank battery.

Surface Requirements

Surface equipment required for the installation consists of a settling tank, power unit and engine, multi-well manifold and the individual well power oil lines. The settling tank installed is of 1000-barrel capacity and receives a portion of the produced oil direct from the gun barrel. Sufficient storage capacity is necessary to guarantee clean oil at the outlet. The power oil is drained off the top of the tank, picked up by the booster pump, and fed into the triplex. The power unit includes a triplex plunger pump directly connected to a gas engine with the booster pump and a chemical feeder attached. Clean oil going into the triplex is raised to field operating pressure and dispatched through the multi-well manifold into the individual power oil lines. Treating chemical is fed into the power oil at the triplex to treat the produced fluid as it is discharged into the oil string. The multi-well manifold allows individual control of each well at this point, a separate control valve governing the flow of power oil to each well and thereby controlling the strokes per minute of each subsurface pump. The power oil lines laid on the bottom of the lake to each well are 1¼-inch sandblasted line pipe, varying in length from 7000 to 10,800 feet. With this equipment complete control of the three pumping wells from the lake shore is afforded, thereby eliminating the daily visits by the pumper to the well locations out in the lake. Also, since there is no surface equipment installed on the derrick floors, damage to the substructures by vibration is eliminated.



The heater, treater and separator and the triplex pump as elevated on ten-foot structures to allow full-time operation despite high water.

The subsurface equipment consists of the subsurface pump run in each well on 1-inch power oil tubing inside the 2½-inch production tubing. The power oil is discharged into the annular space between the power oil tubing and the production string and brought to the surface along with the fluid produced. The pumps installed in the Catahoula Lake wells are 2½ x 1¼ x 2½ x 1-7/16-inch. With a stroke of 18 inches the engine end pistons have a displacement of 295 barrels per day while operating at 60 strokes per minute, and the pump end pistons displace 422 barrels.

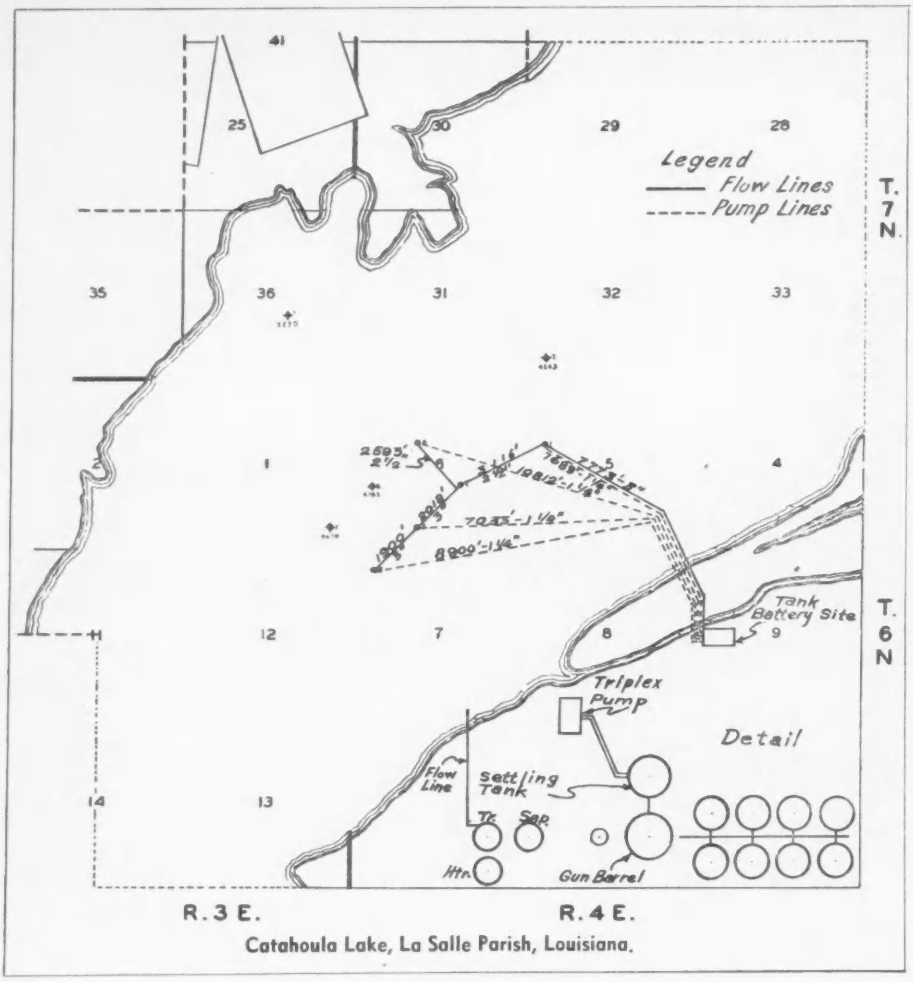
Pumping Equipment

The pumping unit was installed in the 1-A well, including the power oil line from the shore to the location, the power unit and all tank battery equipment required especially for the installation. For the 3-C and 4-C wells, only the subsurface equipment and the power oil lines were required. The 2-C and No. 5 wells, both flowing at the present time, ultimately will need pumping equipment. An additional power unit will be necessary with the conversion of these two wells as the capacity of the present triplex is not sufficient to furnish power oil for the five wells. The cost of all pumping equipment that will be needed for the five wells, calculated on a per-well basis, is estimated to amount to 13 percent more than the average cost of five 28-horsepower pumping units and engines of the type originally in operation on the 1-A well. This added cost of the equipment has been offset by the reduction in down time that the pumps made possible, further augmented by the reduction in personnel risk.

The 40-horsepower engine furnishing

About the Author

WILLIAM S. STOVALL, JR., is employed by The Carter Oil Company in Shreveport. A native of San Antonio, he was graduated from the University of Texas in 1941 with a B.S. degree in petroleum engineering. He was employed by Carter in 1941 as a petroleum production engineering trainee and has been with the company since that time. Initially at Tulsa, he has been in Carter's Southern Division headquarters at Shreveport since 1944.



Catahoula Lake, La Salle Parish, Louisiana.

power for the triplex is operated on produced gas and has a rated horsepower of 43 at 1000 rpm. The triplex with a maximum crankshaft speed of 300 rpm, is rated 40 hoursepower. A recent test on the engine and triplex, with only two wells taking power oil and 1⅜-inch pistons installed in the triplex, showed the engine to be delivering 73 percent of its maximum brake horsepower at 780 rpm. At that engine speed the triplex speed was 235 rpm delivering 608 barrels per day of power oil at a pressure of 1900 pounds per square inch. The 1-A well was taking 310 barrels per day of power oil at a pressure of 900 pounds per square inch, the subsurface pump operating 64 strokes per minute. The 4-C well took 298 barrels per day at 1900 pounds per square inch pressure, pumping 52 strokes per minute. The 3-C well was shut down at the time the test was taken; but, estimated from previous operation, the well normally required approximately 300 barrels per day of power oil at 1300 pounds pressure, pumping 60 strokes per minute. Under normal operation prior to shutting down the 3-C well, the total discharge was approximately 908 barrels per day of power oil at 1900 pounds pressure. The triplex, with 1⅝-inch plungers, was operating at 250 rpm, and the engine at 830 rpm. At that speed the engine operated at approximately 120 percent of its rated horsepower and the triplex at 80 percent of its rated capacity. The maximum operating pressure of the triplex using the 1⅝-inch plungers is approximately 2500 pounds; the 600 pounds additional pressure above the average field operating pressure of 1900 pounds is used in pumping scrapers and soluble plugs through the lines for paraffin removal. The well-head connections are so constructed that the pressure through the 1¼-inch lines is used to pump the rubber balls or scrapers through the field flow line and back to the tank battery.

Hydraulic Cost Less

Between April 21, 1944, and July 1, 1946, the equipment pumped approximately 174,000 barrels of oil and 163,000 barrels of water. Of all the surface equipment only the power unit and engine had any repairs or maintenance expense during the 22 months actual operating time. For the three wells pumped by the equipment during this period there were nine subsurface pump repair jobs. The 1-A had one job, the 4-C had two jobs, and the 3-C, which experienced considerable sand trouble, had six jobs. The beam pumping unit was in service on the 1-A well for 21 months actual operating time and produced 60,000 barrels of oil and 61,000 barrels of water. Comparing the two methods of operation, including all surface and subsurface repair costs (though not including in the beam pump cost the cost of bracing the substructure which would have been necessary), the cost of maintenance and repair for the hydraulic equipment was slightly less than that for the beam pump.

The wells are being operated very satisfactorily by this remote control plan. The pumper is required to make the long and sometimes dangerous boat trip to the location only when it is indicated that the down-the-hole equipment is not operating properly or at set periods during cold weather to insert paraffin scrapers in the flow line. Paraffin is removed from the power oil lines by inserting oil-soluble plugs at the multi-well manifold on the shore. Treating compound is being used to help keep the paraffin from being deposited in the power oil lines and the flow line. The 2-C well is flowing its allowable into the field flow line but the 5-C well will not flow against this back pressure, which is normally 150 pounds. The 1¼-inch power oil line was laid to the well in preparation for installing a subsurface hydraulic pump, but production test showed that the 5-C would flow its allowable of 128 barrels per day of oil through the 1¼-inch line, and the pump has not yet been installed. The 3-C well, after a workover job to run a string of 4½-inch casing inside the 6-inch oil string, is again flowing its allowable. It was found that the 6-inch casing had corroded, allowing salt water from upper sands to enter the well bore. Thus, only two wells are being pumped at the present time.

Cost Reduction Seen

Some down time has been caused by extremely high water in the lake. The elevation of the ground at the tank battery is 49 feet above sea level, and when the water reached the height of 52 feet above sea level the triplex had to be moved out and the wells shut in. In December, 1946, and January, 1947, the triplex, heater, treater, and separator were elevated on 10-foot substructures which will allow the property to operate full time. The savings realized by the elimination of this down time due to high water and the elimination of the rehabilitation expense after each period of downtime will result in the operating costs being considerably reduced.

Mud-Pump Piston Lubrication

LEFT, the block-mounted pump, belt-driven from the pump shaft, is flexibly connected to the sump so as to eliminate vibration damage, and to simplify setting up on a new location. The sump is equipped with drain for removing entrained water, and with an overflow hose to prevent fouling of the working space.

RIGHT, pump rod lubricating unit, with removable collector below rod to facilitate cleaning and reduce contamination of lubricant. The gravity return line is made up with tees on all turns to provide easy cleaning and enable setting to be made with minimum time spent in aligning units.

OPERATING under conditions which impose severe service requirements, the rod on the mud pump not only is exposed to wear from grit-laden mud working out past the packing, but often it must also operate in a dusty atmosphere where air-borne sand and grit settle on the rod and are carried by it to the matrix of the packing, there to act as an abrasive. Wear or scoring of the rod and damage to the packing follow, with frequent down time for replacement or repacking.

One contractor protects his rod by insuring that it be adequately lubricated and the packing thus maintained in soft condition, serving to reduce wear and prevent imbedding of grit particles. The lubrication system is improvised from a short section of ten-inch casing, a small gear or positive displacement pump, and a Vee belt, together with a few pieces of scrap pipe and some odds and ends of neoprene or other oil-resistant hose.

The pump is mounted on a short block of heavy timber, and positioned under the protruding end of the pump shaft so that a Vee belt of the proper length can be slipped over the shaft and pump sheave and tightened by moving the block away from the shaft. The block may be bolted or spiked to the rig floor to insure proper belt tension.

The discharge side of the pump carries a ½-inch line, extended to the recess in the pump casting and terminating in a vent directly above the pump rod. Oil from the pump is discharged in a stream over the rod, excess being wiped off by both packing glands, to collect in a sump of corrugated sheet metal, and to return through gravity collector outside the pump skid to the sump.

The sump, formed by welding a 15-inch long section of ten-inch casing to a 15 x 15-inch square of tank sheet steel, is equipped with a removable lid, and has two handles welded on for ease in shifting.

Returning oil from the collector on the pump enters the body of the sump below the outlet line to allow settling before return. At the base is a drain line, permitting entrained water and sand to be drawn off without shutting down the system.

Connection between the sump and the suction side of the pump is made through the section of oil-resistant hose. This is to absorb vibration and slight changes of distance between the two units. A second hose, connected to a nipple welded just below the top of the sump, provides overflow of oil in case the sump is flooded, without the oil being wasted on the floor to create hazard for the crewmen.

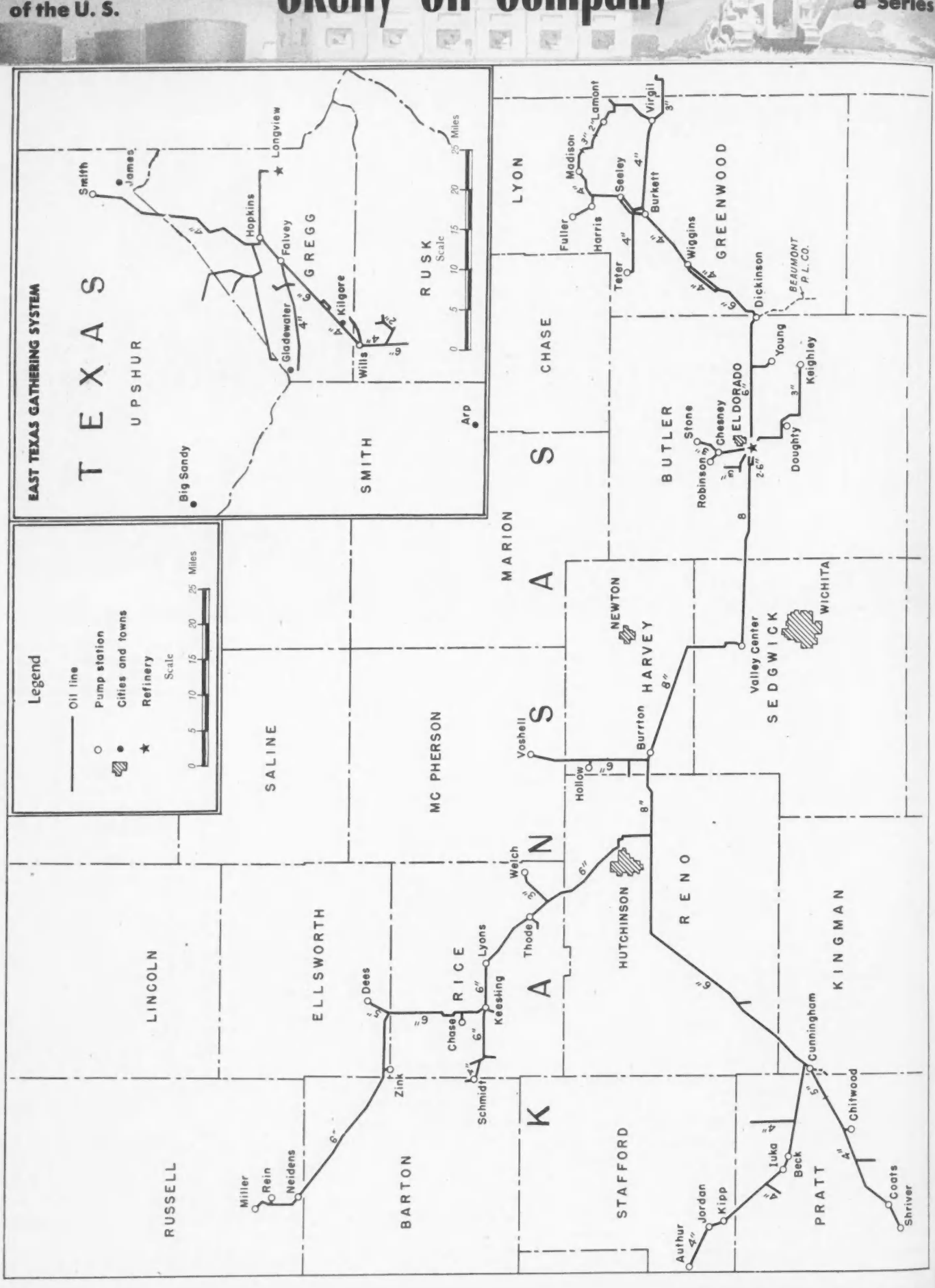
The return line is connected to the sump with a union close to the container, so that the system may be dismounted and transported as a series of separate units instead of having to attempt to maintain alignment when skidding the pump.

Use of the corrugated collector under the rods, with a slip joint into the upturned tee of the return line, enables the collector to be taken out and cleaned readily without the need for flushing out the entire area of the recess in the pump casting.

Pipe Lines of the U. S.

Skelly Oil Company

22nd of a Series



New Drilling Technique

WITH MOTOR-DRIVEN BIT

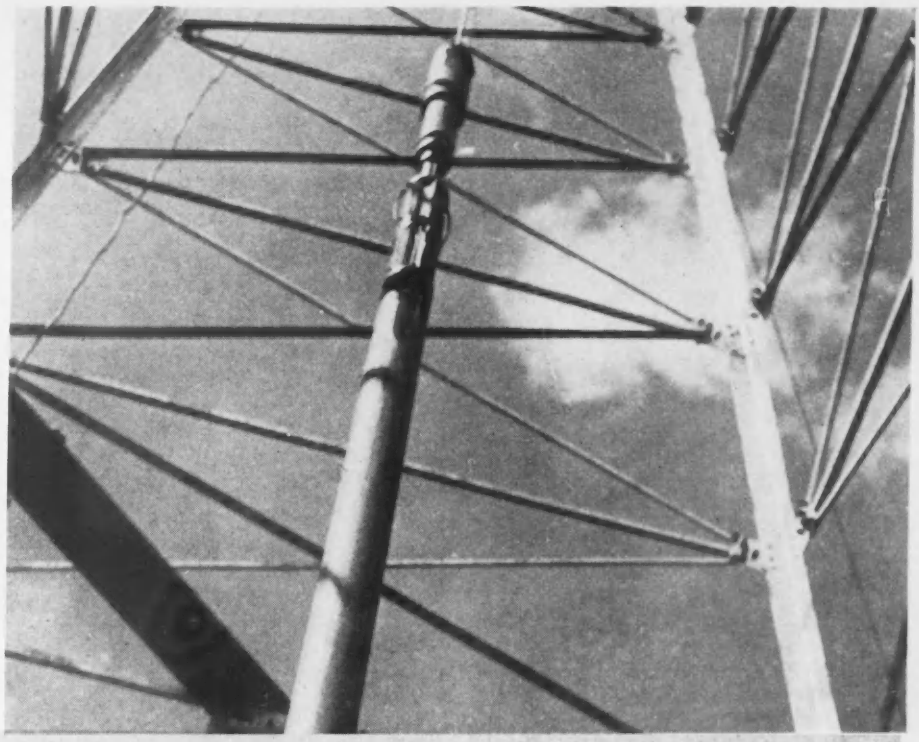
In effect putting the rotary table down the hole with the bit, a novel application of the streamlined motor designed for down-the-hole pump drives enables the entire drilling unit to be cable controlled, eliminating mud pumps and drill stem, and utilizing a bailing technique for cuttings removal. Experimental runs yield good preliminary results, and indicate possible fields of utilization.

By ANTHONY GIBBON
Staff Writer

A DRILLING unit consisting of a hollow steel column incorporating an electrically-driven motor which transmits power sufficient to turn a conventional rotary-type bit at high speeds, recently had its first public showing at Reda Pump Company plant, Bartlesville, Okla.

Since first placed in actual operation the working model, which is 5⅜-inch outside diameter and designed for drilling a 6⅛-inch hole, has successfully penetrated more than 180 feet of gummy and cherty lime formation, in a series of demonstrations.

The new unit, based on the principle that the torque should be applied directly to the cutting tool at the bottom of the hole instead of from the surface, was designed by A. Arutunoff, Russian-born inventor of the Reda pump, who has assigned all patent rights to the Electrodrill Corporation.

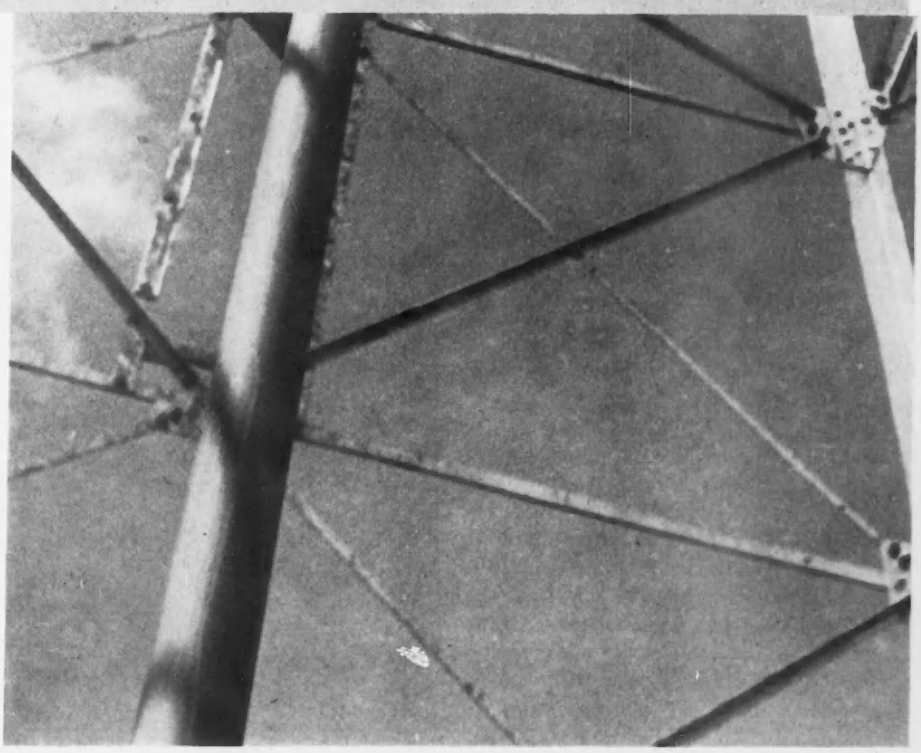


Up-the-derrick view of electrodrill unit used in preliminary tests at Reda Pump Company's plant at Bartlesville, Okla.

Briefly, the new technique consists in drilling by an electrical motor-driven unit from 70 to 140 feet in length, lowered and raised in and out of the hole by a power cable. Such cable of tapered design can be made for any depth required. The motor is designed to withstand high temperatures. Drill pipe and mud pumps are discarded.

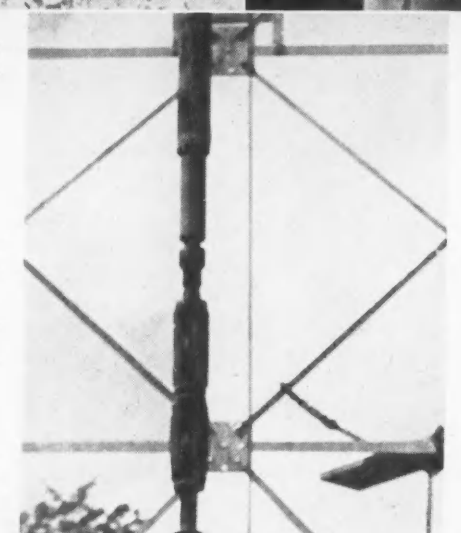
The only requirement for operation is that there be in the hole sufficient fluid to submerge the entire unit. Cuttings are deposited in a vertical bailer which forms an integral part of the unit, by action of a circulating pump incorporated in the unit, the entire assembly being pulled out of the hole to dump cuttings every 30 to 60 feet of hole cut, depending on the height of the derrick and the length of the unit in operation. Average weight of the unit is 1700 pounds.

Essentially, surface equipment includes



Above left: Cores cut in gummy shale and cherty lime section during preliminary tests of electrodrill unit at Bartlesville, Okla.

Above right: Outward opening window in bailer for dumping cuttings.
Below: Lowering electrodrill into the hole. Shown are junk basket and swivel, friction dogs and bailer.



a derrick, spudder, generator and double drum drawworks to spot cement with dump bailer. The drawworks includes one drum for current-carrying cable and one drum for bailer or sand line.

Unit's Parts

In addition to the power cable from which the unit is suspended, the integral parts of the electrodrill consist of junk basket, swivel, friction dogs, bailer, motor, circulating centrifgual pump, gear box, drill collar and bit.

The motor is a 17½-horsepower, 60-cycle, two-pole induction 380 volts standard Reda motor and starter and the cable is a two-conductor, 14-pound insulated cable jacketed with Buna-N rubber, 24 preformed wires over jacket and 24 preformed steel wires reverse laid over inner steel wires. Size is approximately ⅝-inch OD.

The unit was specifically designed to effect economies in deep drilling by eliminating time lost by going in and coming out of the hole with conventional drill stem.

At the present stage the unit is designed to operate most effectively in areas where hard or semi-hard formations predominate such as in the Mid-Continent, Rocky Mountain and West Texas sections, making the use of drilling mud unnecessary to maintain the walls of the hole. By dispensing with mud fluid, substantial economies are anticipated in drilling operations.

Engineers associated with the development of the electrodrill state that its effectiveness is far less in areas such as the Gulf Coast where soft formations predominate which can be drilled quickly with conventional rotary rigs.

Even in areas where hard formations constitute the greater portion of the drilling column, soft, sloughing shales and artesian water sands may be expected and a technique has been worked out to cope with such situations.

Where such formations are encountered a wing or flare-type bit is used and the hole is cut to the full length of the unit. The unit is then pulled out and the section cemented off in a manner customary in cable tool operations. When the quick-setting cement has hardened it is redrilled, leaving a tube of cement to support the walls of the hole. Reaming and cementing procedure is repeated until the soft formation has been drilled through and cemented off. In areas suitable for the electrodrill it is estimated that only about 5 percent of the linear footage drilled will consist of caving formations and that the cementing procedure will be less expensive than the mud bill, which sometimes amounts to as much as $50,000 per well in a conventional rotary drilled well.

The electrodrill is expected to cut a hole that will stand up at least long enough to reach the pay and provide ample time for setting the oil string. To prevent blowouts the well head must be provided with lubricator and bradenhead through which operations are conducted. The electrodrill is adapted to coring, with best work anticipated when equipped with a diamond core cutter.

At present the unit is designed for conventional rock or fishtail bits, but cutting tools designed for greater efficiency are contemplated if field operations demand it.

Since the use of mud-laden fluid has been discarded in the new technique, the designer has met the problem of removing cuttings from the hole by designing a bailer unit which has proved its efficiency in initial tests.

The Bailer

The bailer, an integral part of the assembly, consists of a hollow steel tube having the same over-all diameter as the rest of the unit. Extending the full length of the drilling column and therefore passing through the center of the bailer, is a smaller diameter steel tube which acts as a conductor for the power cable, and which is important in the circulatory process.

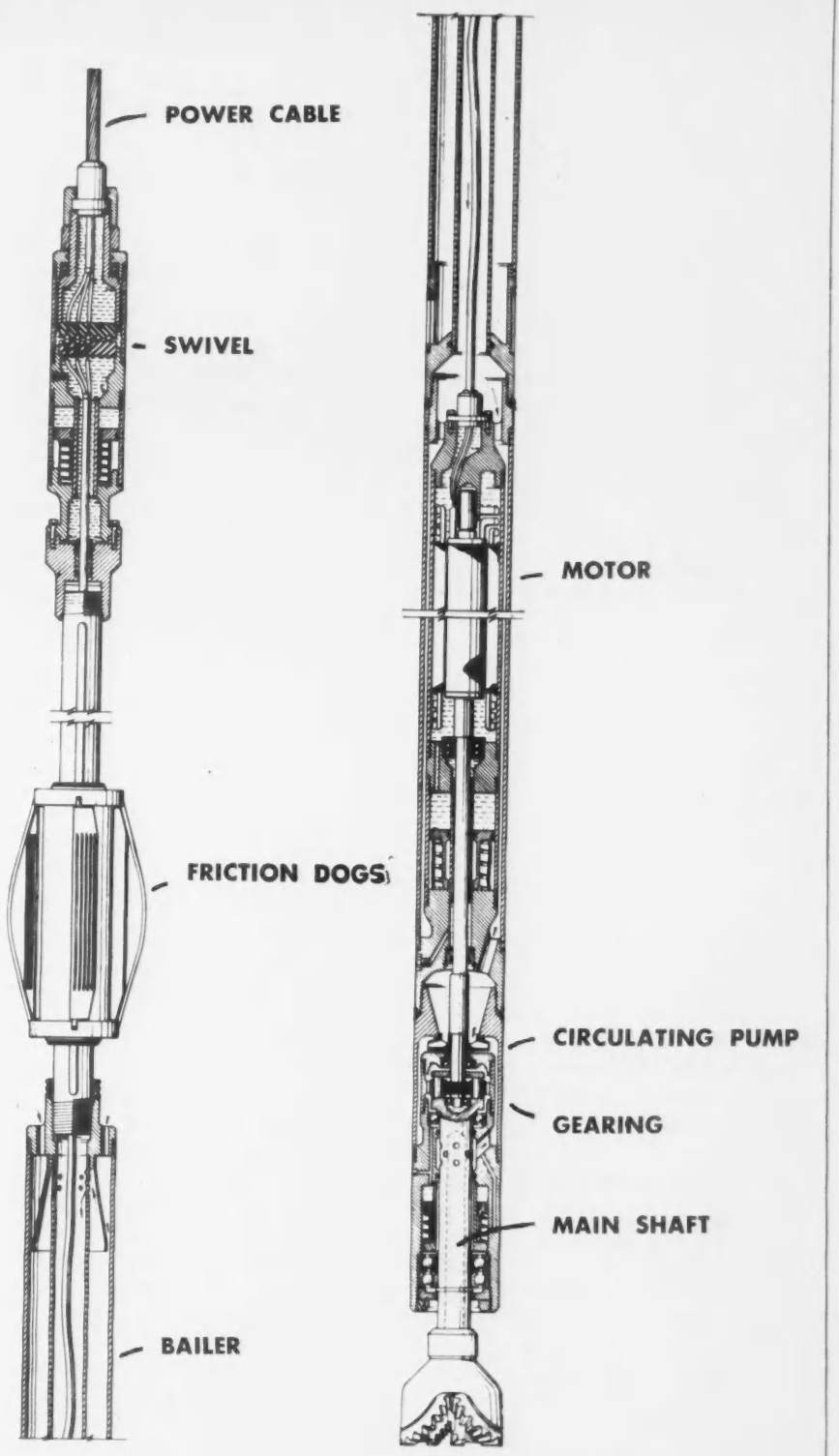
The bailer is assembled at the upper part of the unit just below the friction dogs which grip the sides of the hole while drilling is in progress and thus prevent the unit, other than the cutting tool, from rotating.

Cuttings are circulated by centrifugal force from the bottom of the hole to the top of the bailer and enter the bailer through orifices, thence dropping to the bottom in the annular space between the outer bailer shell and the inner power cable conduit tube.

In the circulating process, the cuttings and lighter fluid pass over inclined baffles set within the annular space, cuttings dropping to the bottom by gravity while the fluid passes over, into and down the power cable conduit tube to the circulating pump at the lower end of the drilling unit for recirculation.

When the unit has cut hole to the extent of the full length of the bailer it is raised from the hole, cuttings ejected through an outward opening window at the lower end of the bailer, and lowered again to bottom after which drilling is resumed.

Despite the many round trips required to dump the bailer the technique is said to be cheaper than conventional rotary methods which require many hours coming in and out of the hole to change bits. Savings in time and operating costs are progressively greater with increased depth.



Cut-away section of electrodrill

The facility with which the electrodrill can be hoisted and lowered in order to change bits is considered an economic feature, especially in deep well drilling where the going is hard and rock bits must be replaced frequently.

In operation the electrodrill is practically noiseless and, regardless of size or depth of hole to be cut, can be operated by a two-man crew. Flags are taped on the power cable at regular intervals to indicate footage drilled and to appraise the driller when the maximum run has been reached so that the unit can be hoisted out of the hole and the cuttings ejected from the bailer.

The designer stated that the electrodrill was developed to meet the need for an apparatus which could be lowered and raised on a wire line; to provide for the use of a cutting tool that could be rotated at high speeds, and to remove cuttings from the borehole.

On the drawing boards now is a unit that will be 7⅜-inch OD, designed to drill nine to 9¾-inch hole, diameter sufficient to set seven-inch pipe. When completed the unit is to be sent into the field to test its efficiency under actual drilling conditions.

Availability OF PIPE AND TUBING

By W. F. McCONNOR
Vice President in Charge of Sales, National Tube Company,
U. S. Steel Corporation Subsidiary

MUCH of the expansion of the oil industry, from the drilling through the pipe line divisions, is directly dependent upon the availability of tubular goods, and any evidence that the situation with regard to those commodities is bettering is an incentive to further planning. This summary of conditions as appearing to one of the largest tubular goods manufacturers affords a forecast of what may be anticipated in the immediate future, and gives the oil company executive an opportunity to evaluate the status of his own need and approximate supply.

I WELCOME the opportunity of discussing with you today the subject of "Availability of Pipe and Tubing," and its relation to supply and demand, both at the present time and in the future.

This is particularly timely because of the many questions asked us in the pipe and tubing industry, among the most frequent being:

1. What is wrong with the tubular goods industry that it is shipping such a small amount of pipe and tubing?
2. Where is all the pipe and tubing going, and why isn't more available in the products in which we are interested?
3. What is the present overall demand, and how much does it exceed the supply?
4. What are the short-range and long-range prospects for improvement in availability of pipe and tubing?
5. Is there any truth to the reports that large quantities of pipe and tubing are being sold in the black market, and likewise, that large quantities are being exported?

By discussing these questions openly with you, I believe we will have a better understanding of our mutual problems.

Production Trend

A review of the industry's actual production of pipe and tubing as taken from the published record of the American Iron and Steel Institute will give us the historical pattern of past demand upon which this industry must project its future policies and programs:

Annual Production of Pipe and Tubing

Year	Production (Net Tons)	Year	Production (Net Tons)
1931	2,059,421	1939	3,764,272
1932	1,107,542	1940	4,272,684
1933	1,588,353	1941	5,736,906
1934	2,045,887	1942	5,283,844
1935	2,276,544	1943	6,219,345
1936	3,643,779	1944	6,406,423
1937	4,282,584	1945	6,030,243
1938	2,580,463	1946	4,689,932

The average of the ten prewar years, 1931 to 1940, was 2,700,000 tons per year, and the four-year prewar period, 1937 to 1940, 3,700,000 tons. As pipe and tubing were very critical items for the war effort, production increased steadily during this period, reaching a peak of 6,400,000 tons in the last full war year of 1944. This figure dropped to 6 million tons in 1945, due to reduced production in the reconversion period from V-J Day in August to the end of 1945. In 1946 the production of 4,700,000 tons was quite high, considering the interruptions due to the steel strike in January and February of that year, and the coal strike in April and May, coupled with curtailed production due to many shortages such as scrap, coal, coke, labor, freight cars, natural gas, fuel oil, etc. Preliminary data for the first quarter of 1947 indicate that industry production was approximately 18 percent in excess of the average quarter for 1946. Thus, it might be estimated that with a continuing good product mix and no interruptions to production, a total of 5½ million tons could be attained for the year 1947. However, in view of the critical shortage of natural gas and fuel oil last winter, it appears that the industry will again experience shortages in this respect in the coming winter. Likewise some difficulty may be experienced in coal and other situations, leading to some curtailment. In any event, it is expected that 1947 production will be in excess of 1946 production, which would make available a greater tonnage than ever before in a non-war year.

Insofar as product distribution within the pipe industry is concerned, the following breakdown for a typical 5 million-ton year would be expected from the historical pattern:

Standard Pipe	2,030,000 tons
Oil Country Goods	1,500,000 tons
Line Pipe	862,000 tons
Tubing Specialties (Mechanical & Pressure Tubing)	485,000 tons
Miscellaneous, All Other	123,000 tons
Total	5,000,000 tons

Within a short time after V-J Day, August, 1945, the collective demands for pipe and tubing were so greatly in excess of the available supply that some form of allocation or controlled distribution became necessary. The procedure adopted by National Tube Company was to follow as nearly as possible the principles of the Controlled Materials Plan set up by the War Production Board during the war period. Briefly, the pattern followed by us was to take the ingot tonnage available for pipe and tubing production, and allocate this tonnage into standard pipe, oil country goods, line pipe, and tubing specialties, in the same percentage proportions as obtained in a typical prewar period. The end product was then distributed geographically and by industries in as equitable manner as possible from a historical pattern. The details of handling the allocations and orders were varied to conform to the conditions peculiar to a particular class of goods. We were able to allocate all the principal tubular products except large trunk lines. Because of complexities of sizes, quantities, intermittent purchases, etc., this product had to be handled more or less on a first-come, first-served basis, endeavoring to maintain historical precedent regarding the proportionate spread between the oil

An address presented at the Annual Meeting of the National Association of Purchasing Agents, June 2-4, 1947, in New York City.

and gas industry and trying to serve as many companies within a given year as possible. In the case of this pipe line tonnage, as of this writing, we are booked with firm orders almost through 1950, with two large projects running into 1951.

In any form of allocation it is impossible to take into account the many factors that might affect equitable distribution, such as population shifts, advances and retardents in certain industries, questions relating to the critical nature of certain products, etc. However, it must be recognized that any form of allotment, whether the basis may be to the advantage or disadvantage of a certain group or customer, is far superior and more equitable as a whole, than filling up order books on an unrestricted basis.

It must be kept in mind that allocations had to be tempered with the mills' ability to produce within certain size ranges, finishes, etc., and with their ability to handle and ship, physically, the allocated pattern under the unusual conditions existing during the reconversion period. Our company aim in these trying times has been to give the best service possible to all of our customers collectively. It has been necessary to discontinue a few items which we formerly manufactured, due to high costs, excessive restriction of production, etc., but in most cases we have been able to offer some substitutes which would fill the customers' requirements. Such cases in percentage of our total output are very small. National Tube Company has not restricted any distribution geographically on account of freight absorptions, nor have we disturbed the historical distribution by industries and classes of goods, even though the profitability involved was poor in many cases. We are pleased to say that on the whole there has been understanding and cooperation between producer and consumers. One example of such cooperation was evidenced in the case of the production of large-diameter, heavy-wall seamless pipe. The requirements of this product for many industries involved wide variations of sizes, quantities, lengths, specifications, etc., and the average rolling was relatively small. With increasing labor costs, this item was very unprofitable, and serious consideration was given towards eliminating it entirely. However, data were prepared showing complete details of eight months' order bookings, listing the varying sizes, classes, lengths, grades, etc. This information was sent to all customers prior to a meeting which was held in Pittsburgh to discuss the problem. A large number of customers attended the meeting, at which time it was explained that a solution to this problem might be reached by basketing orders on a restricted number of sizes, thicknesses and specifications, furnishing only long random lengths. The range of items was determined by the requirements of the majority, and a schedule was prepared that would permit individual rollings of reasonable proportions. Thus, industry continues to secure this product at no premium in price, and to avoid the purchase of forgings at a cost of four to five times the pipe mill product.

About the Author

WILLIAM F. McCONNOR, vice president in charge of sales for the National Tube Company, subsidiary of the United States Steel Corporation, first became affiliated with the tube company in 1917 in the engineering department. He was appointed general manager of sales for the company in 1936 and was advanced to his present position on August 1, 1946.

Tubular Mill Capacity

Many persons inquire as to capacity figures for producing tubular goods. In general, capacity figures of finishing equipment cannot be accepted unqualifiedly but must be adjusted to the reality of controlling conditions. There has always been surplus finishing mill capacity in the steel business, due to the flexibility required for various types of product mix in different periods. Obviously, at a time when industry is endeavoring to make full production, the ingots available for any particular product will limit the production possibilities of a finishing mill. Variations of product mix will make a considerable change in the capacity of a finishing unit. Soaking pit capacity, bar and blooming mill capacity—particularly for certain sizes of semi-finished required—any many other variations and changes affect capacity figures. Some capacity reported includes marginal equipment involving high costs, obsolete and worn-out equipment, etc. However, the total capacity for pipe and tubing, as published by the American Iron and Steel Institute, was 8,300,000 tons in 1944; 8 million tons in April, 1945; and 7,650,000 tons as of January 1, 1947. The decrease in capacity is due to obsolescence and dismantling of worn-out, high-cost production units, primarily for the production of lapweld pipe. Three major companies have dismantled all their lapweld equipment, and most of the remaining companies have curtailed or dismantled a portion of their lapweld capacity. In 1944, the percentage of production to capacity of finishing units for the industry, for all tubular products was 73.2 percent; in 1945, 72.5 percent; and in 1946, 61.3 percent.

The current demand for tubular products is difficult to estimate accurately in total, as pipe is primarily a service item. Requirements are intermittent and varied. Very little pipe is fabricated into consumer items. However, some estimates of the demand for certain classes of tubular goods can be made. For example, there has been a tremendous demand for large-diameter trunk lines. In February of this year we conducted a spot survey among the large oil and gas companies, covering pipe lines 20 inches o.d. and larger which they had on order or desired to install within the next five years. The aggregate of this tonnage representated more than 1 million tons a year, which is 20 times the volume of this size pipe purchased for trunk lines in the five-year prewar period. There is, no doubt, some duplication of tonnage where competing companies desire to lay lines serving the same locality. But allowing for this and also for the fact that some of the projects are still in the preliminary stages, it is evident that the tonnage is beyond the ability of industry to produce in this period. This high ratio of demand to supply is significant for this commodity only, as the 20-inch and larger trunk line tonnage in the prewar period was only 2 percent of the total pipe and tubing tonnage.

Let us examine the over-all trunk line demand, including all sizes of pipe, which represented about 10 percent of the total prewar tubular tonnage. In the case of National Tube Company the immediate postwar booking of firm orders in a period of less than 1½ years covered deliveries extending to five years. This condition is not too surprising, as there was very little pipe line construction during the entire war period.

The demands for refinery pipe and tubing for maintenance and new construction were checked in a brief survey, and the requirements were about seven times the actual prewar period purchases. However, this tonnage requirement is a very small percentage of the total tubular tonnage.

High Tonnage Required

Referring to the demand for oil country goods, it is significant that in the four-year war period of 1942-1945, an average of 23,693 new wells was drilled

per year, as contrasted with 32,221 new wells drilled in 1946, or an increase of 27 percent. The average depth of well drilled in 1946 was 8 percent deeper than in 1942. The drilling program projected for 1947 in number of wells and depth of wells shows a further increase over 1946. While the supply of oil country goods does not equal the present demand, it is much more nearly in balance than the situation existing with respect to line pipe and refinery tubular goods. The high tonnage required in oil country goods has been accentuated by the nature of the demand. Casing of 80,000-pound minimum yield, which for National Tube Company was 7 percent of the tonnage of total casing in 1942, increased to approximately 26 percent in 1945. This added burden has been largely due to increased well depths as indicated by the fact that in 1935 the first well was drilled to a depth greater than 12,000 feet, while in 1946 there were 106 such wells. In the 1942-45 period an average of 35 wells per year of 12,000 feet and deeper was drilled as compared with three times this number in 1946.

Standard Pipe

In the case of standard pipe and miscellaneous line pipe, the market is so scattered and varied that it would be very difficult to conduct a survey of this demand. We do know that the average standard pipe distributor, for his out-of-stock business, asks for more than twice his allocation. Stocks at the mills and in the hands of jobbers and distributors have been reduced to a minimum figure. It is significant that it would take four months with the present output of standard pipe to rebuild mill and jobbers' stocks to a prewar ratio commensurate with present production, if we did not ship a single foot of pipe to any consumer in that period.

There are a few exceptions where the demand is declining, amounting to a small percentage of the total tonnage. For example, high-alloy tubing has been readily available at good deliveries for some time. The production of drill pipe is beginning to come closer to the demand, particularly in the case of API drill pipe. There is a trend toward the lessening of the gap between demand and supply in the case of cold-formed mechanical tubing. This latter, however, is really only a trend, as comfortable backlogs still exist and deliveries are somewhat extended.

If the demand for other steel products declines before pipe and tubing, there is a possibility that this will release some additional semi-finished steel that can be processed into pipe and tubing with industry's present capacity. This additional tonnage, however, would not be large.

It is recognized that the immediate postwar needs for tubular goods are abnormally inflated on account of the necessary restriction of this commodity during the war period.

It is questionable whether the sustained demand over a long postwar period would justify increased tubular capacity. The actual figures indicate that industry on a normal basis, with equipment in good shape, unhampered by strikes, shortages, etc., could produce about 5½ million tons per year with a good peacetime product mix. This is 48 percent over the 1937-1940 average consumption.

The high costs of construction considered against the low profit position of pipe and tubing are not conducive to expediting further capacity increases. It should be understood that the equipment of the pipe and tubing industry has been driven to its utmost over a sustained period of six years, with only the emergency repairs, and practically no replacements.

In the case of our company, we embarked upon an $85 million post war program of rehabilitation and expansion, involving the revamping of our butt mill facilities; a complete, new modern mill warehouse for the handling of standard and miscellaneous line pipe; a new coke plant; a new blooming mill, billet mill and bar mill; additional ingot capacity covering about 30,000 tons of ingots per month; and a new seamless mill to manufacture two-inch to four-inch pipe. This last-named mill embodies new principles, and is a fast, high-production unit of a type that will outrank any other seamless mill we have. The remainder of our appropriation covers the consolidation of two of our plants manufacturing specialty tubing, and includes another new seamless mill at this location for specialty tubing. Construction costs are rising so rapidly that the present-day cost of installing this equipment will be very substantially in excess of the original $85 million. It should be kept in mind that this project is primarily one of rehabilitation and modernization. After completion of this program, our production capacity will be better balanced to handle the present trade requirements and product mix. The increased production available is estimated to be only about 13 percent of our present production.

Strike Delays

It must be realized that new construction is hampered by many obstacles, including long deliveries in electrical equipment. Prolonged strikes in this industry, as well as volume demand, have contributed to this situation. Our program, which we had hoped to carry out in two years, has been delayed by many shortages, strikes, etc., and we shall be most fortunate if the project can be completed by the end of 1948.

I am not familiar, of course, with the detailed plans of other producers of pipe and tubing except to state that very little increased capacity has been definitely announced. A buttweld mill is being installed on the Pacific Coast which may add 10,000 tons per month to the available capacity of this product by the end of the year. One or two other companies have mentioned the possibilities of installing some additional equipment in 1948 or 1949. Another company on the Pacific Coast has put in some equipment for the fabrication of large-diameter pipe from plate for oil and gas trunk lines.

Black Market Rumors

Several persons within the industry have investigated some of the many wild rumors regarding the large quantity of pipe and tubing sold in the black market and have come to the conclusion that the actual figure is a very insignificant percentage of the total tubular tonnage. When you consider that the bulk of our product is sold under allocation, our sales people have a close check on this tonnage and where it is going. To cite one case that occurred a few months ago, certain offers were broadcast to the trade offering buttweld pipe at $14 per ton over our carload consumer prices. As a test case, acceptances of these offers were made by a number of jobbers, and not a single order was actually taken.

In the case of export, the tonnage which the industry shipped in 1946 is the same as the prewar percentage bought in the free, prewar market. Actually, the volume involved was less than seven percent, and in our case, over 90 percent of this tonnage was shipped to American companies operating in South America and the Near East. Our export allocation for 1947 is on the same basis.

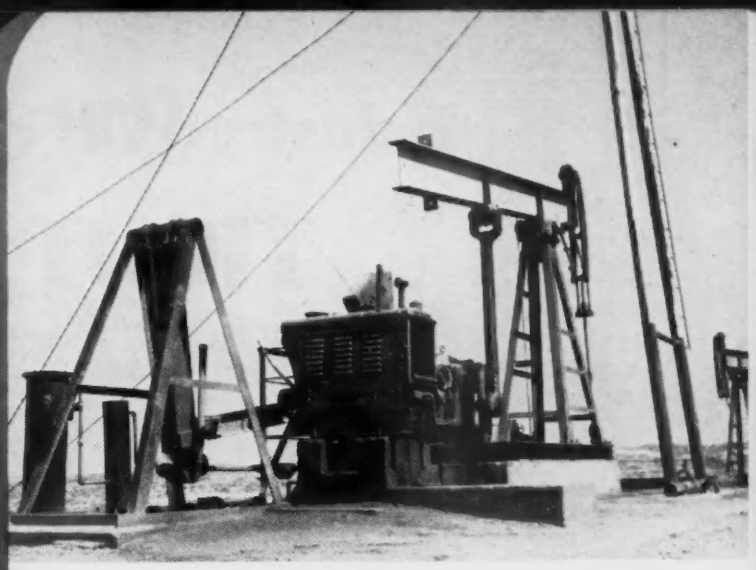
Purchasing agents, with their many contacts, have considerable influence in their company policies, and we are very glad to have this opportunity to contribute some information on the subject. I have endeavored to be factual rather than optimistic or pessimistic in this presentation. It is my earnest hope that you have sufficient information regarding the pipe and tubing situation that you can present this matter factually to the executives of your respective companies. It is my feeling that both our company and the pipe and tubing industry as a whole, have done a good job in supplying tubular products to the trade under very trying conditions in the greatest period of sustained business activity in the history of the U. S.

HOT WEATHER'S

on it's way again..... but

A-C ENGINES

CAN TAKE IT



Two well hook-up powered by a smooth running A-C Model U Engine. Torque 200 ft. lbs. It really gets hot in West Texas.

Allis-Chalmers Model E Engine on a heavy well in Oklahoma. Model E torque is 400 ft. lbs. Continuous operating range 600-1200 r.p.m.

Allis-Chalmers Model L Engine with 590 ft. lbs. torque. This engine drives a 5" x 10" pipe line pump.

Summer heat does not increase the maintenance cost on Allis-Chalmers power engines, because they are designed to deliver maximum rated power on *stationary* installations.

Allis-Chalmers power engine units are slow-speed, high torque, prime movers with cooling and lubricating systems built to maintain proper operating temperatures on full load stationary installations regardless of outside temperatures. They do not have to be run at high speeds to secure proper cooling, as the engine blocks have large water capacity and the moving water first cools the hottest part of the engine. Water pumps are high velocity impeller type.

Fuel and oil bills won't increase in hot weather on Allis-Chalmers Engines.

A-C Model L Engine 590 ft. lbs. torque
A-C Model E Engine 400 ft. lbs. torque
A-C Model U Engine 200 ft. lbs. torque
A-C Model W Engine 128 ft. lbs. torque
A-C Model B Engine 87 ft. lbs. torque

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FRED E. Cooper Hale Station, TULSA, OKLAHOMA

Industry Will Solve Problems of

TIGHT SUPPLY

By EUGENE HOLMAN
President, Standard Oil Company (New Jersey)

CONFIDENCE is expressed by the author that the industry will successfully solve the current serious problem of meeting the unprecedented demand for petroleum products, despite abnormal handicaps in expanding facilities and operations.

Total industry requirements for the immediate future will be met, he declares, in the absence of extraordinary and unforeseen contingencies. However, transportation and distribution difficulties, particularly in the Midwest, may cause temporary short supplies in individual localities or for an individual supplier; and costly emergency expedients and last-minute deliveries probably will be entailed.

The current tight supply situation is only temporary, asserts the author. Expansion and construction programs now planned or in progress will restore the industry's traditional margin of supply over demand.

TODAY we can all agree that the industry's major problem is that of meeting greatly increased needs of consumers everywhere for oil products. For the first time in the peacetime history of our industry we are finding it difficult to increase the supply of products rapidly enough to meet mounting consumer needs. Tightness of products supply has developed at many places, particularly here in the Middle West.

Eugene Holman

Today we have frequent references to a "shortage" of petroleum products. I think the word "shortage" may be creating a mistaken impression on many people. There is no basic shortage of petroleum. The shortages we are talking about result from the industry's difficulty in closing a small but significant gap between a record supply of petroleum products and a record demand for them. That gap, in my opinion, will be closed. The oil industry has the ability and the foresight to do this job. The only thing I can see which would raise any question about this are factors completely beyond our control, such as unforeseen interruptions in flow of construction materials or events in the national picture which cannot now be foreseen.

Basic Supply Ample

Let's look at the several pieces which make up the pattern of our present situation.

First of these, of course, is that of our basic supply of crude oil. I want to make it clear and I think all of you should do so repeatedly, that there is no shortage in our basic crude oil supply. There is ample oil, in the form of proved reserves underground, to meet today's needs. Getting enough of this oil out of the ground in time will be a big job. But the vast majority of oil men are convinced that it will be done. Of course this refers to the immediate picture. I am not talking about the ultimate long-range supply, which is another matter. But I am also convinced that there is no need for concern regarding our long-range supply of raw material for oil products. There is still a great deal of crude oil to be found in this country. But, over the long term, we will have to depend increasingly upon other sources to supplement our domestic supply.

Two basic additional sources are available for this purpose when and if needed. The first of these is imports from foreign countries. Petroleum reserves and discoveries in foreign countries are increasing at a high rate. The second additional source is the manufacture of liquid oil products from sources other than natural petroleum. These include coal, natural gas and oil shale. In the short-term future substantial quantities of petroleum products will be made from natural gas. And experimentation is well along on the liquefaction of coal, which, as a matter of fact, awaits only economic development for its application on a major scale. The manufacture of oil products from coal and other sources gives us assurance that over the long-term future there will be no lack of liquid fuels. Obviously, however, such a revolution in our industry will not come overnight.

With respect to imports, the entire industry seems agreed on a policy of using imports to supplement but not displace domestic sources of crude. Imports should be used to strengthen, not weaken, an industry so vital to this country's welfare as petroleum.

Unprecedented Consumption

Another important piece in the pattern we are considering is that of demand, or consumer needs.

There are two widely accepted estimates of U. S. requirements for oil products in 1947. They are the forecasts made by the Economic Advisory Committee of the Interstate Oil Compact Commission and by the Bureau of Mines. The estimates are pretty close and tend to confirm each other. The Bureau's figures, which are slightly higher, estimate a total demand for crude and products at 5,733,000 barrels daily, including exports. That is a large figures. For the year, the industry will be asked to deliver nearly 2.1 billion barrels of crude and products. It is difficult to keep our perspective when we talk of figures like that. The U. S. alone is now using more oil than the entire world before the war.

As you all know, the industry had an unprecedented first quarter this year. According to the Bureau of Mines, domestic demand was up 13.4 percent over the first quarter of last year. This experience might indicate that the year's estimated total of 5,733,000 barrels daily is too conservative, since it is only 7.7 percent above 1946.

However, preliminary second quarter figures indicate considerably smaller increases over last year's figures. Part of the increase in both first and second quarters could have resulted from ab-

Presented June 30, 1947, before Marketing Division of The API at Minneapolis, Minn.

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normal movement of stocks from refinery tanks and bulk terminals to secondary storage. Such a movement would show up in the Bureau's figures as demand against the industry even though the products were not consumed.

I think it may help in viewing the problem if we break down the figures to correspond with the two principal seasons in the industry's retail business —gasoline in the summer and heating oil in the winter—and compare the two periods. The Bureau estimates that this year, from April 1 to October 1, the demand for oil will be 5,577,000 barrels daily, well below the estimated yearly average. But for the six-month period between October 1 this year and April 1, 1948, a reasonable estimate, based on the Bureau's figures for the last quarter this year, indicates an average demand of 5,977,000 barrels daily—400,000 barrels a day more than the expected summer period demand.

Must Go All Out

There is the problem in a nutshell. The industry must go all out now to produce products. It must store them against the record-breaking requirements ahead of us next winter.

I cannot emphasize too strongly that this is the key to success in meeting the situation ahead of us. Refinery runs should average about 5,200,000 barrels a day during July, August and September if we are to be sure of having as much heating oil and other product stocks on October 1 as we had last year.

Crude oil stocks may have to be drawn down from present levels between now and October. And this is in spite of record production that is currently exceeding 5,100,000 barrels per day.

If the industry succeeds in getting ready now for the heating season, it might even be possible to slack off just a little in crude and refinery runs during the October-April period—and still reach April first next year in good shape with an adequate storage of gasoline. However, we are working with estimates. Little, if any, spare capacity is available. As a precautionary measure, the industry should operate at maximum rates until we are sure that the public and government needs of the future can be met comfortably.

These then are the requirements of our industry over the short-term future. They are far and away the greatest in the industry's history. They exceed even the peak war demands and are stetadily increasing. These demands reflect the manner in which people everywhere are turning more and more to the use of oil products. In addition to meeting the normal expansion in the use of oil, the industry is today carrying a particularly heavy burden since other major sources of energy have not borne their share of the generally increased demand for fuel.

Physical Equipment Strained

Now let us look at another part of our pattern — the matter of physical equipment to meet the heavy demands which are being placed upon us. For the first time in our peacetime history, we find our facilities, from producing field to delivery tank truck, strained to the utmost. The reasons for this have been stated many times but it is still in order to recite them again. From 1941 to 1945 the complete effort of the industry was directed at providing equipment and facilities to supply products especially needed for the war effort. While the construction programs during the war period were immense, they did not result in any substantial increase in the capacity of the industry to supply its normal products. Because of the pressure of war needs, even normal replacement of equipment in producing, transportation, refining, and storage of products was postponed.

Since the war the industry has had not only to catch up with its normal program of replacement and modernization, but has also had to expand its capacity in order to meet record new demands. Right now the industry is in the midst of the greatest construction and expansion program in all its history. Just a few days ago the announcement was made that over the next two years the industry planned to spend nearly $4 billion in this country alone. It is hard to grasp the magnitude of a program which in the space of a few years will involve expenditures amounting to over 20 percent of the total investment of the industry to date. It is an immense job, and its completion, even under normal circumstances, would be a tremendous achievement. Yet we are hampered by the many limitations which all the world faces during this postwar reconstruction period. The industry is moving fast, however, in spite of such problems as shortages of materials. I know of no one who is not optimistic about its ability to overcome these obstacles and to regain very soon its traditional ability of keeping ahead of demand with its plans and programs.

Still another piece of the industry's present picture which must be examined if the present situation is to be understood, is the immediate problem of dealing with these demands while our construction and expansion programs are in progress. It will be some time before new facilities are available. What are we doing meanwhile to meet present demands?

The record of recent months speaks for itself. Crude oil production for the four weeks ended June 21 reached an all-time record of 5,090,000 barrels per day. In refinery crude runs to stills, for the same period, the all-time record figure of 5,098,000 barrels per day was established, surpassing without even so much as a side glance the wartime peak of 5,001,000 barrels per day reached in July, 1945.

As an industry, we can be proud. What other major industry has done as well as that? When you get outside the oil business you have to look mighty hard to find industries that are now breaking their wartime records.

To us in the industry, those figures represent a lot more than just oil. They represent the devotion of every member of our industry to his job, and a widespread sense of responsibility to meet the requirements that face us.

Crude production and refining rates are now at levels where we can begin to see light. But the industry's activity must remain at these high levels until we can be sure that the nation is adequately served, even though some of the operations involved are unusual and costly.

Large quantities of West Texas crude, for example, are being moved by tank car at high cost, some into the Middle West and some to the Gulf Coast. This is providing marginal increments of crude which are very important in the industry's present picture. Crude would not be provided in this manner under any normal conditions. Pipe line capacity is under construction now to make this West Texas crude available under more economical conditions.

New pipe line capacity to the Midwest —about 60,000 barrels a day, I understand—is under construction and will be in operation by the end of this year, and perhaps another 250,000 barrels a day will be in operation by some time next year. These lines should greatly ease the situation in one of the most critical supply areas at the present time.

Efforts are being made to maximize production from all accessible fields. I believe that within every state the appropriate authorities have examined their production regulations to put into effect possible ways of getting more crude, without, of course, damaging the fields. By this time next year, the increasing exploration and wildcatting that are now going on will begin to bear fruit, I hope, in a somewhat higher potential production.

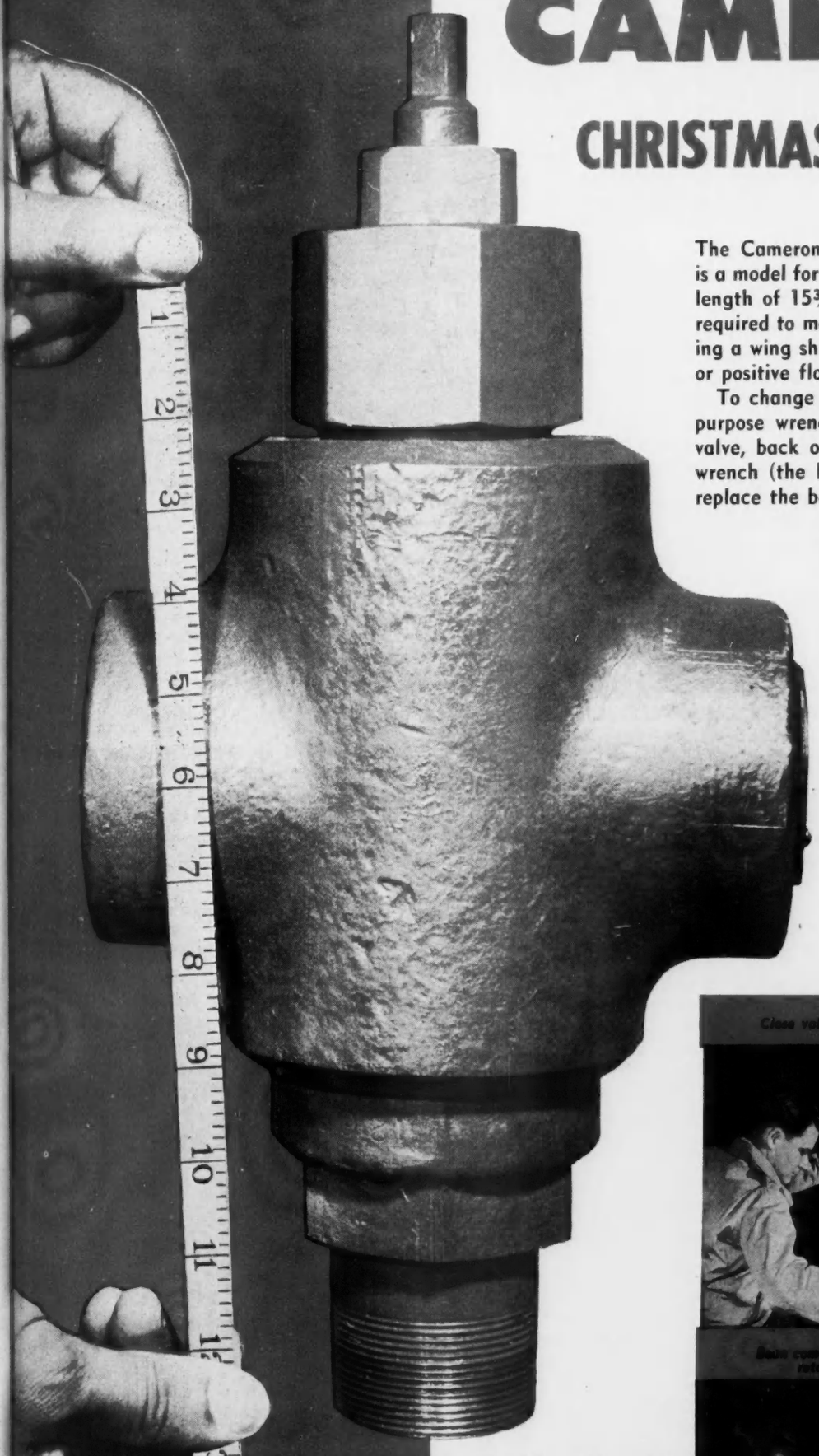
Expanding refinery operations, even under unusual conditions, are also the order of the day.

Estimates of the industry's refining capacity are subject to many interpretations, but from practical experience it would appear that there is in this country about 4,900,000 barrels a day of efficient capacity. If that is correct, the

IN THESE FEW INCHES OF STEEL, A COMPLETE

CAMERON

CHRISTMAS TREE WING



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refinery runs needed will require the expensive operation of from 200,000 to 300,000 barrels of inefficient plant capacity until new refineries now building come on stream.

Outlook Hopeful

The foregoing facts and figures certainly entitle us to be hopeful and optimistic about meeting the current total overall demand for petroleum products.

However, it is one thing to balance the overall statistics so that the "average" customer is satisfied. It is another —as we all found out during the war— actually to deliver our products to our millions of customers at thousands of places at just the moment they want them. Two hundred gallons of heating oil at St. Louis, earmarked for Minneapolis, doesn't help the Minneapolis home owner who needs oil within an hour. "On the average" is a fine phrase, but we have got to do better than that. Every individual customer has got to have oil when and where he needs it, if it is humanly possible for us to get it to him.

As we all know, it is here in the Midwest that the job will be much more difficult than anywhere else in the country. Just prior to the war, the Midwest produced more than 1,100,000 barrels daily of crude. Its refineries in 1941 ran slightly under 1,100,000 barrels daily, so that refinery capacity and crude production were essentially in balance within the area.

Today refinery capacity in the Midwest has been expanded. Crude runs are averaging about 1,300,000 barrels a day. But crude production has actually declined since 1941 and, from the figures I have seen, it appears that a gap of about 470,000 barrels a day has developed. To fill this gap, large additional amounts of crude must be moved into the Mid-west from other areas.

Present pipe line facilities are carrying, I believe, about 400,000 barrels per day of that total. The rest must be moved by such means as barges and tank cars, which places an additional load on the already short supply of these facilities. In addition, consumption of products in this same area is now considerably greater than refinery capacity, and the large quantities of products which must be brought into the area, principally from the Gulf, multiply the transportation problem. The complete answer to this problem has not yet been found, but great effort is being expended on it.

Situation Summed Up

All this is reflected in the current level of crude and product stocks in the Midwest, which are appreciably lower than they were a year ago—the only part of the country where this is true. It is clear that you here in the Midwest have a job to test your mettle.

Let me now sum up briefly the overall situation as I see it.

First, overall industry requirements for the immediate future will be met, provided of course, that we do not have to face exceptional contingencies such as an abnormally hard winter, shortage of competitive fuels, or unpredictable developments in the national scene.

Second, transportation and distribution difficulties, particularly in the Midwest, may cause temporary short supplies in individual localities or for an individual supplier. There probably will be costly emergency expedients and last-minute deliveries.

Third, the current tight supply situation is a temporary, not a permanent one. The expansion and construction programs now planned or in progress will restore the industry's traditional margin of supply over demand. Our supply of basic raw materials is not in question.

Thus far I have attempted simply to summarize the facts as I see them concerning a tight situation facing all of us in the oil industry today. We are hard put to give our customers all the oil and gasoline they want — simply because they want more than they have ever wanted before.

Every bit of equipment we have for getting oil from wells to delivery trucks is being worked overtime. If we had not had a great war job to do, we would have concentrated on building new equipment to meet this demand. As it is, we are for the moment having to do with what we have.

Now if this is a reasonably accurate summary of the situation—and I hope that you may agree that it is—then I would like to leave *facts* and express some *opinions*.

My first observation is that the whole oil industry is tackling this job in a way that makes me proud to be an oil man. Everybody—drillers, refiners, tank car men, truck drivers and service station attendants, and all of the hundreds of thousands of other men and women who make up the petroleum industry recognize that circumstance over which we had no control have put us on a tough spot in supplying our customers. And to a man, every one of them is doing his level best to get off that spot as fast as possible.

Inform Customers

My second observation is that we are so intent on doing the job itself that we may forget to keep our customers informed about it.

I would guess, for example, that very few Americans know right now what has already been achieved. How many of our fellow citizens know that we are today producing more crude oil than we ever produced before—even in the war years? How many know that we are right now delivering oil products to our customers here in the U. S. at a greater rate than the consumption rate of the whole world, outside Russia, before the war? How many know that during 1947 alone American oil companies are investing nearly $2 billion to make sure that our customers can count on us over the years ahead?

Perhaps that is just another job that we must add to the many we have already taken on. The American citizen is known for his fairness. He will not criticize us for putting him to temporary inconveniences if he understands the size of the job we are tackling for him. It is not enough to serve the public interest. People want to know about it. They like to look over our shoulders and see how we are doing.

Lastly, I think the *job will be done.*

The interests of our customers will be served to the very best of our ability. And our ability is not inconsiderable. It is the ability of men of resolution and determination. It is the ability of free men operating in a competitive market, who have faced great problems in the past and overcome them.

In concluding, may I urge that all of us, in this time of great demand, bear in mind our long-term view of the industry. As I said to a group of producers in Bradford just a few days ago:

This is a time for self-discipline, for business statesmanship, and for driving forward on another gigantic job the American public expects us to do.

This is a time for investment in the future. We have an obligation to help stabilize an economy of which we are an important part. Our policies should be based not on short-term expediency but on the long-term interests of the industry as a whole.

Next Week

The question of a U. S. national oil policy affects the American domestic operator and the American oil operator abroad. It affects the stockholders, officers and every other employe. That is why the final report of the U. S. Senate Committee (O'Mahoney Committee), beginning next week in WORLD OIL, is MUST reading for everyone in the oil business.

Don't Miss It

Kirkuk Field

EXPANSION STARTED BY IPC

By HENRY OZANNE

Special Staff Writer

IRAQ Petroleum Company is extending its present producing area of the Kirkuk structure with a postwar drilling program in the Qutan sector where five wells have been drilled so far.

The Qutan wells are about eight miles distance from the famed Baba Gurgur sector, site of the Kirkuk 60,000-barrel a day discovery well in 1927, and the new drilling location is virtually in the center of the Kirkuk structure which is 65 miles long by about a mile-and-half wide.

In addition, IPC is extending drilling operations into the Bay Hassan sector; Well No. 77 has been spudded in, and the derrick is going up on No. 78.

Drilling Is Pushed

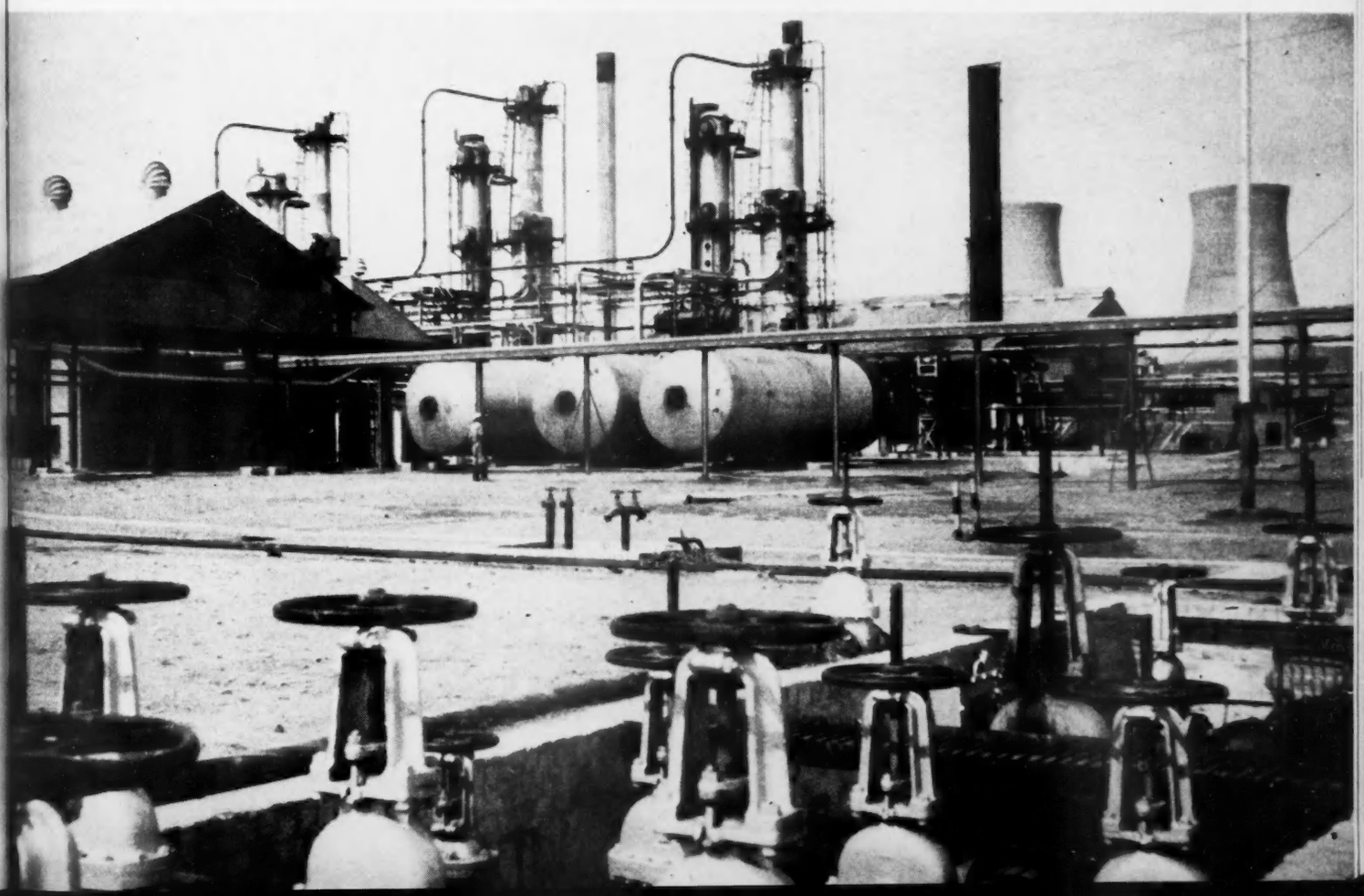
IPC has been pushing energetically its drilling program since the close of the war and is now drilled up sufficiently to supply the new 16-inch pipe line under construction to parallel the existing 12-inch system from the fields to the Eastern Mediterranean terminals at Tripoli and Haifa. Wells No. 56 to 76 have been drilled since the end of the war.

(IPC spudded in at its Tourbol location, north of Tripoli, Lebanon, on May 7, 1947, with a ceremony attended by Lebanese and Syrian Government officials. This is the company's first wildcat in a drilling program that will cover Lebanon, Palestine and perhaps Syria and Transjordan in addition to Iraq.)

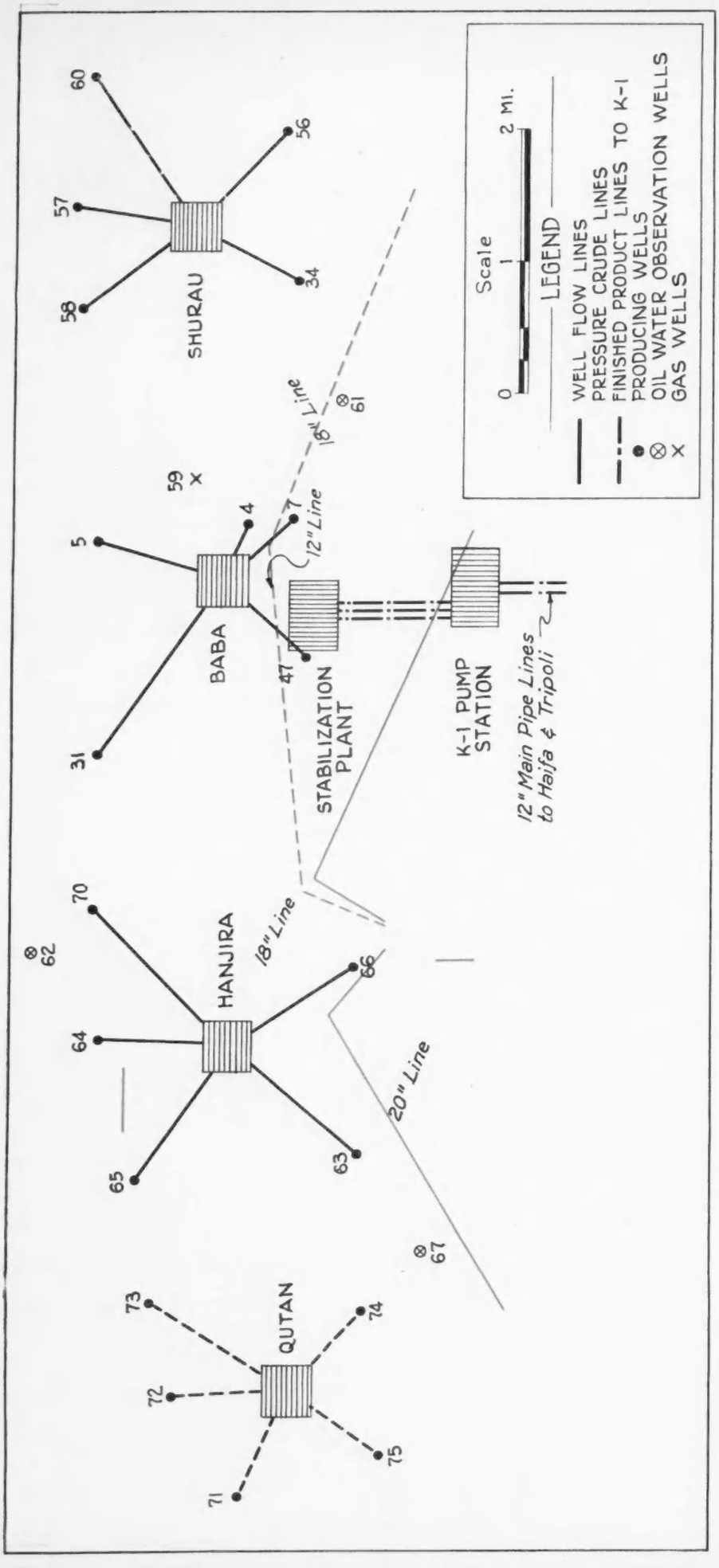
There are at present two degassing stations in operation at Kirkuk and these are handling the total output from the field. A third station is being rehabilitated and enlarged after being closed during the war, while a fourth station is under construction as part of the increased production program. Each station is capable of an operating throughput of 100,000 barrels a day.

The oil is at 60 pounds/square inch pressure when it leaves the degassing station primary separators, and it gravi-

Iraq Petroleum Company is presently engaged in extending the producing area of the Kirkuk structure in Iraq with a postwar drilling program in the Qutan sector where five wells have been completed. The Qutan wells are eight miles from the famed Baba Gurgur sector, site of the Kirkuk discovery well. IPC also is extending drilling operations into the Bay Hassen sector while a wildcat test has been spudded in Lebanon.



The stabilizing plant at IPC's Kirkuk field.



Map shows production area of Kirkuk field. Qutan, Hanjira, Baba and Shurau are degassing stations, into which well lines flow.

tates through a graded pressure crude line to Hortonspheres of 3000-barrel working capacity at 40 pounds/square inch at the process plant which acts as a secondary separator and as the source of the charge stock for the plant where the oil is stabilized.

Three Separators

Each degassing station is supplied by five wells which flow through 8-inch and 10-inch graded flow lines which vary between 5000 and 9000 feet in length. The wells flow into the separator manifold which is fabricated with 10-inch bends and valves and with 12-inch headers to the separators.

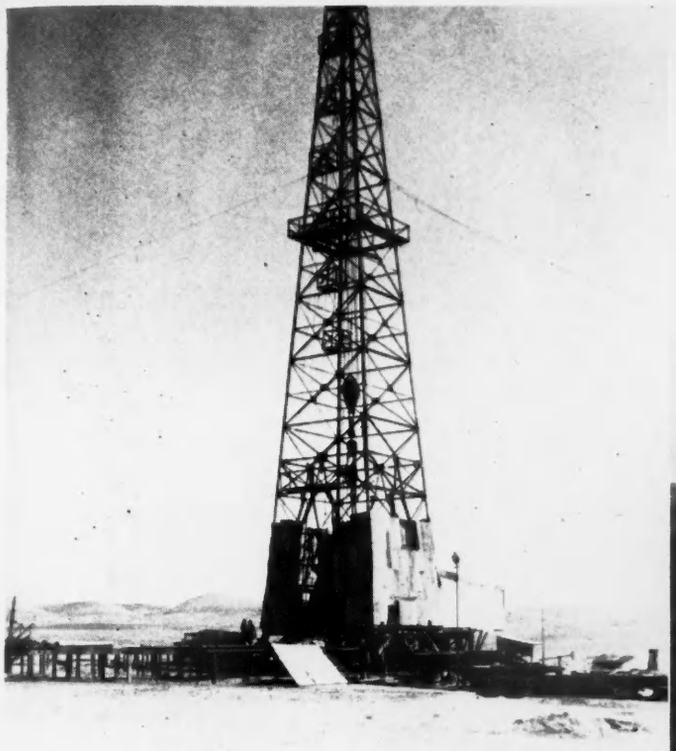
There are three main vertical separators, which are 7 feet in diameter by 39 feet overall, made in England, to IPC specifications. They operate at 60 pounds/square inch working pressure and feature an internal spiral tray for the oil which is constructed a central vertical vent with ports to lead out the gas. The oil outlet is 14 inches and the gas outlet, 8 inches. There are two 20-inch manholes for inspection purposes—one in the oil quieting chamber below the spiral tray and the other in the gas chamber above the tray.

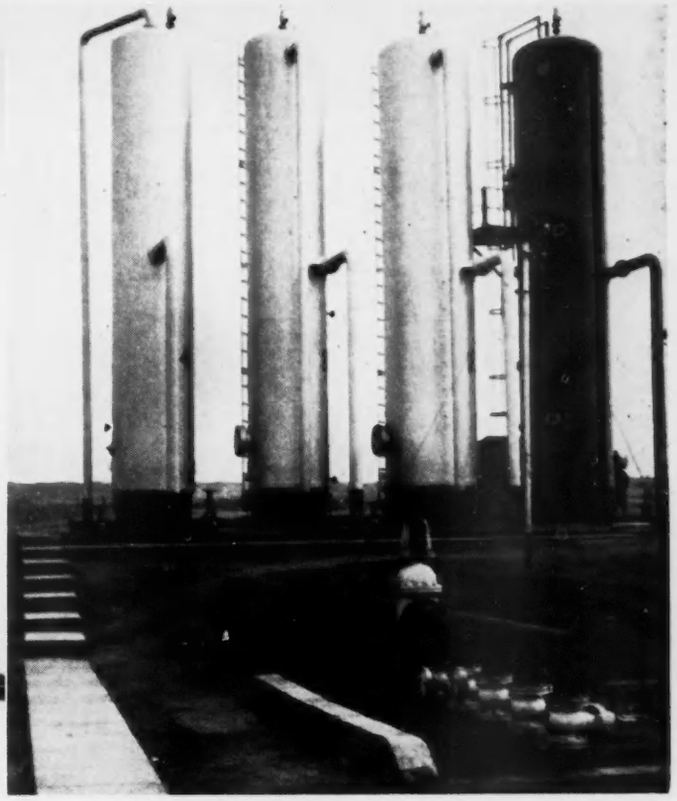
A small separator, 7 feet in diameter by 20 feet high, is also installed and this is used for well production tests. This is connected by a 12-inch line through a manifold to two 15,000-barrel flow tanks where the production is measured, and which may also be used as secondary separators and the dead crude gravitated to the tank farm. These tanks have fixed roofs fitted with headers which have 18-inch gas lines leading through gravel box flame arrestors to a flare point where the gas is burned off. The tanks are fitted with pressure and vacuum relief valves on the roof, and in addition there is a pressure relief valve on the gas line.

A small centrifugal pump is used to empty the flow tanks into the pressure

Annual Production at Kirkuk
(All figures in barrels)

YEAR	Total Production	Returned to Structure	Net Production	Pumped from K-1
1934	7,126,261	.....	7,126,261	6,983,793
1935	26,796,596	.....	26,796,596	26,617,256
1936	29,282,227	.....	29,282,227	29,134,359
1937	30,955,064	.....	30,955,064	30,768,583
1938	31,142,947	.....	31,142,947	30,957,998
1939	28,509,893	.....	28,509,893	28,334,475
1940	17,602,153	.....	17,602,153	17,392,416
1941	10,337,231	.....	10,337,231	10,189,642
1942	22,850,138	5,686,065	17,164,073	16,505,757
1943	26,688,655	1,710,314	24,978,341	24,234,498
1944	30,352,089	944,985	29,407,104	29,046,269
1945	32,480,138	793	32,479,345	32,267,289
1946	32,937,556	22,817	32,914,739	32,694,390





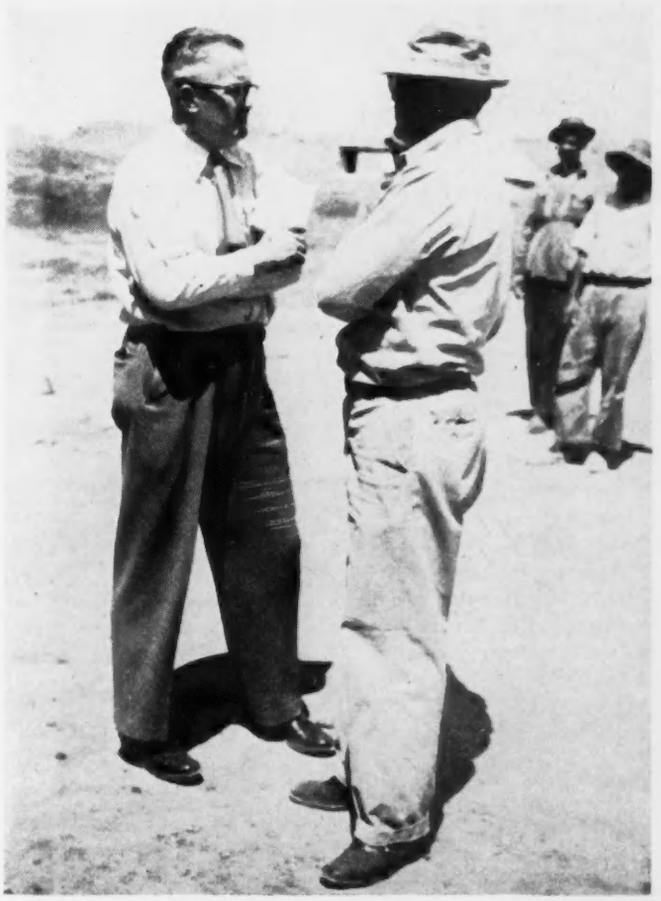
crude line when tests are completed.

Wells in the Kirkuk field have been drilled by the rotary method using steam-driven mechanical equipment and 120-foot derricks capable of carrying a 200-ton load on the drill pipe. The average well depth is 2500 to 3000 feet. About 10 wells are now being produced.

The Kirkuk field is still the largest known unit oil reservoir in the world. There is a small gas dome at the crest of the structure in the Baba Gurgur sector containing natural gas and sulphuretted hydrogen. This gas is at 500 pounds/square inch pressure and overlies the oil with dissolved gas amounting to 220 cubic feet per barrel, in equilibrium with the gas in the dome.

Below the oil lies salt water, pressure on the reservoir being transmitted via this "bottom water" from a water table in some distant mountain range.

Top left is IPC's Well 77, which spudded April 10, 1947. Separators at the Kirkuk stabilization plant are shown at top right. C. H. Driscoll, left below, IPC's drilling superintendent, is shown talking with Bill Killingsworth, assistant superintendent. Driscoll, a North American, has been with IPC in the Middle East for 21 years.



Kirkuk Almost Ideal

The Kirkuk field is almost an ideal one from the production point of view in that the whole reservoir possesses excellent hydrostatic continuity, so that by withdrawing oil from only one comparatively small area the consequent fall of the gas-oil interface level is uniform over the whole reservoir. This makes exploitation of the field probably the most efficient in the world.

Kirkuk oil is a mixed base crude of low viscosity and 2 percent sulfur content. Distillation yields about 28 percent by volume of gasoline, 15 percent of kerosine and 15 percent of gas oil; and a satisfactory Navy fuel oil can readily be produced by a light topping with efficient fractionation.

The straight run gasoline obtained is poor grade with low octane rating and requires special treatment to render the sulfur content non-corrosive. The kerosine also requires severe refining to be commercially acceptable, but the gas oil constitutes an excellent diesel fuel. Lubricating oil and residual asphalts are obtained commercially from the crude.

New Highway For VENEZUELA Oil Areas

By GEORGE O. IVES
Staff Writer

MANY observers hold the belief that Guarico in Central Venezuela offers the best petroleum possibilities of any hitherto unexplored area of similar extent in the entire nation. The region commonly referred to as Guarico actually is the entire western portion of the principal geological province of Eastern Venezuela—the Orinoco Embayment, or Orinoco Basin. It is a vast area of favorable sedimentary conditions bounded on the south by the Guiana shield (sometimes referred to as the Brazillian Shield) and on the north by the northern range of mountains against which many of the formations are laid, although some of the formations are actually folded over the mountains. These latter, however, are for the most part so metamorphosed that they are not commonly considered as offering petroleum possibilities. Geographically the southern limits of the Orinoco are identical with the geological limits, since the Orinoco River itself lies against the shield of Pre-Cambrian rocks and forms a visual boundary.

The Guarico end of the basin, on the basis of information found in drilling Las Mercedes field, and drilling of a number of stratigraphic tests, contains in general the same formations as are found in the eastern end in the states of Anzoategui and Monagas, the location of all of Eastern Venezuela's present commercial production. Since the basin plunges eastward, the formations generally will be found at shallower depths than in the eastern end, and in at least one area the Cretaceous has been found at a depth no greater than 6000 feet. There will undoubtedly be considerable drilling to the Cretaceous as the entire region is prospected.

Inaccessibility Is Drawback

With the obvious appeal of the area's petroleum possibilities it is apparent that the principal reason for the lack of development to date has been its inaccessibility coupled with the relatively easy transportation in the more eastern Llanos section. The eastern section has therefore received the major concentration of activity, particularly since exploration had been rather successful. Areas here have been found productive in practically every known kind of structural condition from anticlinal and faulting, to stratigraphic traps. Since a substantial backlog of production has been established, and since acreage has been made available by the government, the companies are preparing to institute active drilling programs in Guarico to supplement the preliminary geology, geophysical work and core-drilling.

The first major step in intensive work for Guarico was the construction of adequate transportation facilities to permit access to the heart of the favorable region. The oil firms undertook the project on their own initiative and at great cost, and the preliminary construction recently was completed. A road connects Guanta and Puerto la Cruz in Eastern Venezuela with existing hard-surfaced all-weather roads leading into Caracas, and it has now been graded and graveled for its entire length so that travel is possible throughout the year, although a finished oiled or asphalt surface is yet to be applied.

Among the greatest contributions of oil interests to the welfare and economy of many foreign countries is the construction by the companies of highways, terminals, airstrips, ports and other necessities of communication, primarily to increase the efficiency of their own operations but incidentally providing sorely needed facilities which may be used by the citizens of the country for the public good. Almost inevitably discoveries of oil in places such as Venezuela, Colombia, and similar tropical countries occur in areas not too easy of access by existing transportation systems, and after fields have been found and established, construction of all-weather roads is necessary to enable movement of heavy equipment and supplies.

The new highway through Guarico is a radical departure from the usual sequence of developments ordinarily lead-

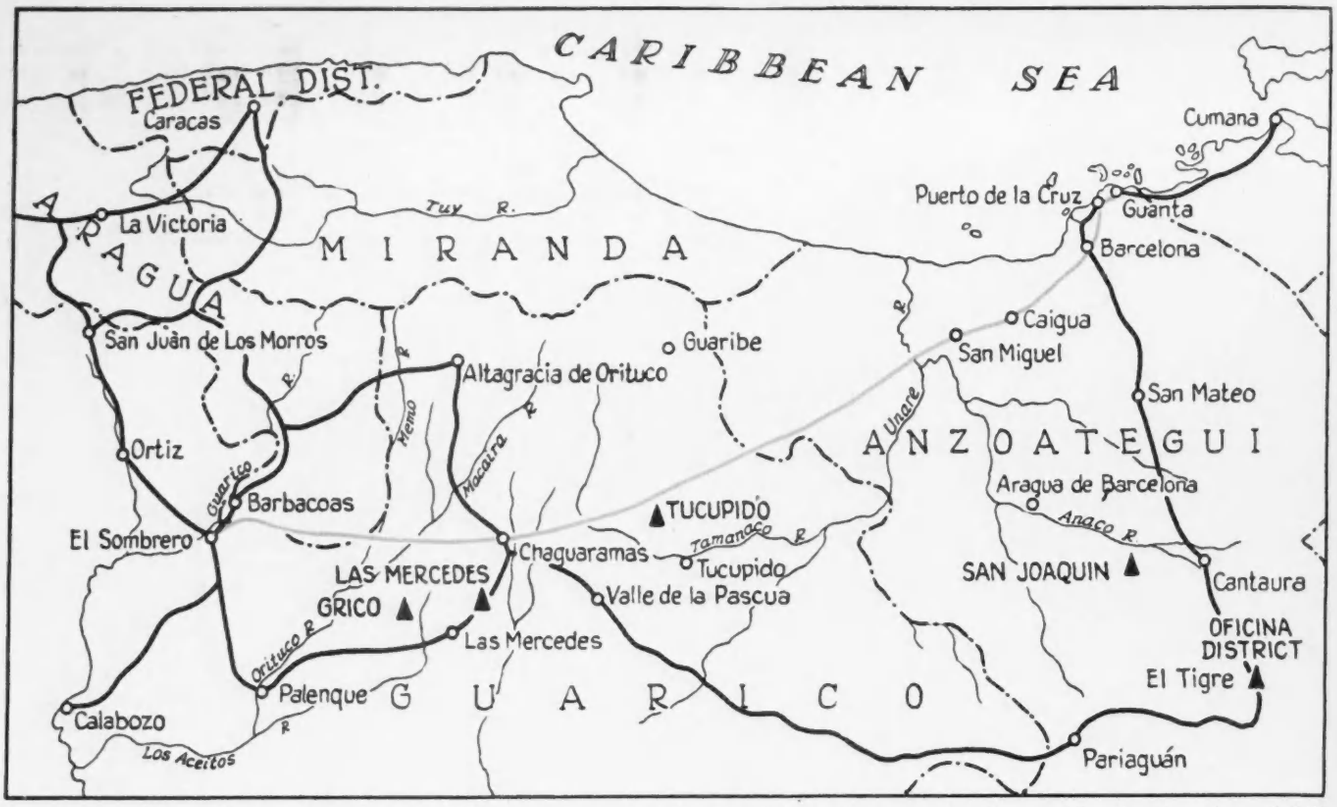
ing up to the construction of a costly road. Here the highway was planned and commenced before sufficient production had been found to guarantee it as an economically sound investment. It is probably the first time in South America that such a project has been undertaken in advance of the actual proving of reserves greater than those tabbed in Central Venezuela before the road construction was commenced.

Reasons for such a project are obvious when consideration is given to the millions of acres of concessions held by foreign companies operating in the country. Within a relatively short time from the initial grant of such concessions, operators must complete enough preliminary exploration to permit them to make an intelligent selection of acreage which is to be kept for possible development, the balance having to be turned back into the National Reserve and reallocated, possibly to competitors. At this time, when companies have an urgent need for communication arteries by which materials and personnel might be moved freely between their various properties in the central area, there existed no reliable roads between Eastern Venezuela and the capital at Caracas. The new highway will furnish the much needed link between the two regions and at the same time traverse the heart of the area in which acreage now under concession is concentrated.

Arrangements were concluded by operating companies for financing the highway, originally estimated to cost some $8 million but now running far in excess of that figure. The expense was shared on a prorata basis in the proportion of the total acreage held by each of the participating companies. The greatest percentage of acreage was held by Las Mercedes Company in which The Texas Company holds an interest, but due to its extensive organization and experience in Venezuela roadbuilding, Creole Petroleum Corporation was placed in charge of actual construction. In this work Creole is under the supervision of a committee composed of five members from all of the companies which committee is responsible for policy and planning.

At the beginning of this year, the area under concession to companies in the western end of the Orinoco Basin, most of which is in Guarico, amounted to 5,976,903 acres. This was divided about equally as exploration and exploitation acreage. Many firms were forced to make selections of acreage without adequate

Installation of culverts on the new highway is shown at top. The middle picture shows portable housing set up for the technical staff, while a survey party on the route of the Guarico highway is at bottom.



Central Venezuela's new highway from Guanta to El Sombrero, shown above in color, will serve the prospective oil area of Guarico where three oil fields have already been developed. The black derricks indicate producing areas.

exploratory work, and some of the acreage they released has been taken up by others.

Under the best conditions in the dry season, a trip by automobile from the Guanta-Puerto la Cruz area to Caracas takes from two to three days. The new road will make it possible to drive between these points in one day. Under poor conditions in the wet season with many rivers to be crossed, and very few existing bridges, the trip by surface was impossible. The new road built by the companies does not extend all the way to Caracas, but terminates at El Sombrero where it connects with the existing hard-surfaced road system through San Juan de los Moros over the mountains to Caracas. It has been efficiently engineered with gentle curves, strong bridges and regular grades, and traverses some of the most interesting regions in Venezuela, following for a time the general route of the old "Camino Real" used by the Spanish in Colonial days before liberation of the South American countries, through a region which abounds in game and wild life.

Some of the country is that which includes the richest farming and stock-growing lands exploited by the Spaniards during their occupation, but since fallen into disuse. It had reached a high degree of development during the period before the War for Independence, but following the liberation there was a period during which the country was unsettled politically, with civil strife following the war against the Spaniards, and the population gradually migrated to other portions of the country. The chief reasons for this exodus were the lack of roads leading to populated centers where products could be marketed, and the uninviting character of the climate. Adequate transportation should give the area many benefits in addition to the possible revenue from discovered oil.

Las Mercedes Field

The foresight of the interested companies in going ahead with the building of the road is being borne out with continued expansion of Las Mercedes field, lying just south of the road itself, and the recent discovery of the Tucupido field by Venezuelan Atlantic Refining Company and Pantepec Oil Company on acreage jointly owned by the two and operated by Atlantic. The discovery well showed favorably on initial production tests, and expansion is indicated by the second well getting the producing horizon just about level with the discovery and about two miles away.

An indication of the need for communications may be gained from the fact that in the region, from which no oil has yet been shipped commercially, there are more than 25 provisional temporary camps being used for the housing of men employed directly in the search for petroleum. This includes those engaged in all types of activity and scattered throughout the region—geological, geophysical and drilling. Most of the present drilling outside Las Mercedes field itself is of stratigraphic nature for purely exploratory purposes, although some of the stratigraphic tests themselves have resulted in good showings of oil and gas, particularly in El Sombrero area, but there have also been showings reported in wells drilled far to the southeast, and to the south. In all more than 2000 men engaged in exploration and development form an oil population of the area, continuously being maintained, housed and supplied. The need for direct and reliable communication lines is important even now, in advance of the heavy demand to come with discovery of new reserves. Currently many of the parties are supplied by air.

In addition to camps operated by Las Mercedes Company and Atlantic, for their producing properties, Creole is constructing a permanent camp 10 miles east of the town of El Sombrero from which base most of the company's operations will be directed. In addition there are various temporary field camps which are moved from place to place as exploration proceeds. In the permanent camp more than 500 men may be housed. Recently 20-odd geological and geophysical parties were active in the field here, in addition to core and structure drill crews, a type of work being carried on by most of the companies in the area.

With the road having reached a passable stage through its length, there should soon be a perceptible increase in operations this, one of the most interesting areas in Venezuela.

Evaluation of OIL EXPLORATION METHODS

By ING. JUAN J. ZUNINO
Yacimientos Petroliferas Fiscales
Buenos Aires, Argentina

IN DETERMINING the prospects of an area from the standpoint of commercial oil and gas accumulation the petroleum geologist must, broadly speaking, find the answer to seven "unknown quantities" or factors. All are of equal importance and if one or more cannot properly fit the picture it is safe to assume that the zone under investigation is unlikely to produce oil or gas in commercial quantities.

For convenience the writer will set forth, first, the indispensable conditions in nature which must be formed as prerequisites to commercial accumulations of hydrocarbons, and, second, to establish how these conditions may be evaluated by using the known methods of exploration.

Under the most favorable circumstances, it is possible to determine all of these indispensable and unknown factors, but, as a general rule, and even when employing all known exploratory techniques, some of these factors will remain undetermined. This is one reason why purely exploratory bore holes must of necessity be drilled in order that they may shed some light on the factors yet undetermined by other lines of investigation. Many who are not familiar with the oil industry erroneously believe that every well drilled is destined to open up a new oil pool, but statistics in the United States reveal that for every discovery well drilled between 1937 and 1945, eight exploratory bore holes were drilled which furnished only geological data.

Factors Indispensable

Since petroleum first assumed its paramount place in industry and became an important study to the geologist, the latter has endeavored to lay the foundation upon which successful exploration and discovery might be based. Numerous theories and hypotheses have been advanced that, little by little, have established certain fixed basic conceptions which, some 20 years ago, were summed up by F. G. Clapp as the "fundamental criteria which determine the existence of hydrocarbons."

Discussing the requirements which must be met, geologically, before an area may be considered as deserving of exploration, the author points out seven basic "unknown quantities" or factors. Each of these is evaluated, and production possibilities assessed in reference thereto, with especial emphasis on the problems as presented in relatively unexplored regions.

Since the study of any potential petroliferous area must be based on these criteria, these factors are enumerated so that a clear conception can be formed as to the unknown questions that must be answered in order to approach the problem of finding oil in a logical and rational manner.

In order that a region may present the maximum possibilities as an oil field it is necessary to obtain confirmation or to offer a positive solution to four important problems, which have been grouped among the "unknown factors" already referred to:

Stratigraphic Problem:

1) Are rocks of sedimentary origin present?
2) Does the stratigraphic profile reveal the existence of porous and permeable formations within the reach of the drill?
3) Are these porous formations sealed by a sufficiently thick and impermeable cap?

Problem As to the Existence of Petroleum:

4) Has the existence of petroliferous source beds been established?
5) Has metamorphic action taken place? If so, has it been intensity

At top of page—Geological reconnaissance in the rugged Jujuy region of Argentina.

sufficient to dissipate whatever hydrocarbons might have been in place?

Structural Problem:

6) In the formations considered petroliferous are there structures with sufficient closure to trap commercial accumulations of hydrocarbons?

Problem of Accumulation:

7) Are hydrostatic conditions of such nature as to constitute an obstacle to petroliferous accumulations?

1) Igneous rocks or rocks formed through magmatic solidification and which originally were in a state of flux, such as granite, were formed under such extreme temperatures and pressures as to exclude the possibilities of their retaining hydrocarbons. In exceptional cases small oil accumulations have been found in this type of rock, but in such instances their presence has been due to a combination of very favorable circumstances which permitted migration through fractures of some oil from adjacent sedimentary rocks. In other words, if sedimentary rocks had not been present in the vicinity of the igneous rocks no oil would have been present in the latter.

Such being the case and in line with past experience and the actual concept governing the generation and accumulation of hydrocarbons, it can be seen that only the sedimentary rocks which have been formed through the destructive action of other rocks are important. Proof of their existence is the first step in determining the petroliferous possibilities of a province under investigation.

Porous Strata Required

2) Unfortunately, not all sedimentary deposits are accompanied by the other indispensable conditions required for commercial oil accumulation. In order to carry oil they must have porosity and permeability so as to permit the circulation of fluid. Furthermore these porous strata must be within the economic reach of the drill.

3) The structural theory also requires that such porous and permeable strata be guarded or closed (trapped) by an impermeable cap capable of retaining the volatile hydrocarbons which otherwise would be dissipated.

4) Having established the existence of sedimentary deposits which conform to the essential conditions of the stratigraphic problem, we are ready to attack the question concerning the presence of oil. The problem of the existence of oil in sedimentary deposits is directly related with its origin and how it is formed so that the solution of this unknown factor is the basis for all study relating to the source beds which generate petroleum. Where oil and gas seeps are in evidence or where oil and gas shows are reported in test wells, the answer to this unknown factor is more easily attained. It is evident that such seeps and shows indicate the existence of petroleum but, unfortunately, they cannot indicate quantity. For example, in Jujuy Province, Argentina, there are many oil and gas seeps present, but to date no commercial production has been developed. The same conditions obtain in certain regions of Brazil and in many other sections of the globe.

Oil and gas seeps, while they have led to the discovery of commercial oil in some areas, cannot be considered as primary criteria, but rather secondary in importance to the study of petroleum source beds. When the concept of source beds was first originated it was considered that those beds having the richest type of organic life presented the greatest possibilities and could be identified by their dark color. This concept appeared in numerous reports on many petroliferous districts, but in 1926 the American Petroleum Institute recognized the importance of this line of research and assisted in further investigation being later joined in this work by other large and important geological institutions.

This study culminated with the publication in 1942 of the work *Source Beds of Petroleum* by P. Trask and H. W. Patnode. Trask declared that his analyses of 35,000 samples demonstrated that the organic contents of the sediments represented by the "reduction number" and the nitrogen content are very important and that the relation between the nitrogen content and the "reduction number" is the best indication of the existence of oil. The value of this relation varies between 3 and 10, judging from wells drilled in all sections of the United States, and the comparison of these figures with the production obtained in the respective areas establishes that the favorable areas are those where the geologic formations have a value under 5 and where the value exceeds this figure the area offers slight prospects for commercial accumulations.

Based on these figures one can appreciate the importance of these analyses especially in exploration work in distant areas where one well showing favorably enables the operator to assess the possibilities for production in a particular section of the district without testing all the structures in the general area.

Significance of Metamorphism

5) Metamorphism acts in a negative manner insofar as accumulations of hydrocarbons are concerned because its presence signifies important changes in the rocks due to the effects of heat and pressure. Because of its action, the porosity and permeability of the sands are reduced practicaly to zero and the temperature generated in the process destroys or volatilizes whatever petroleum might originally have been present.

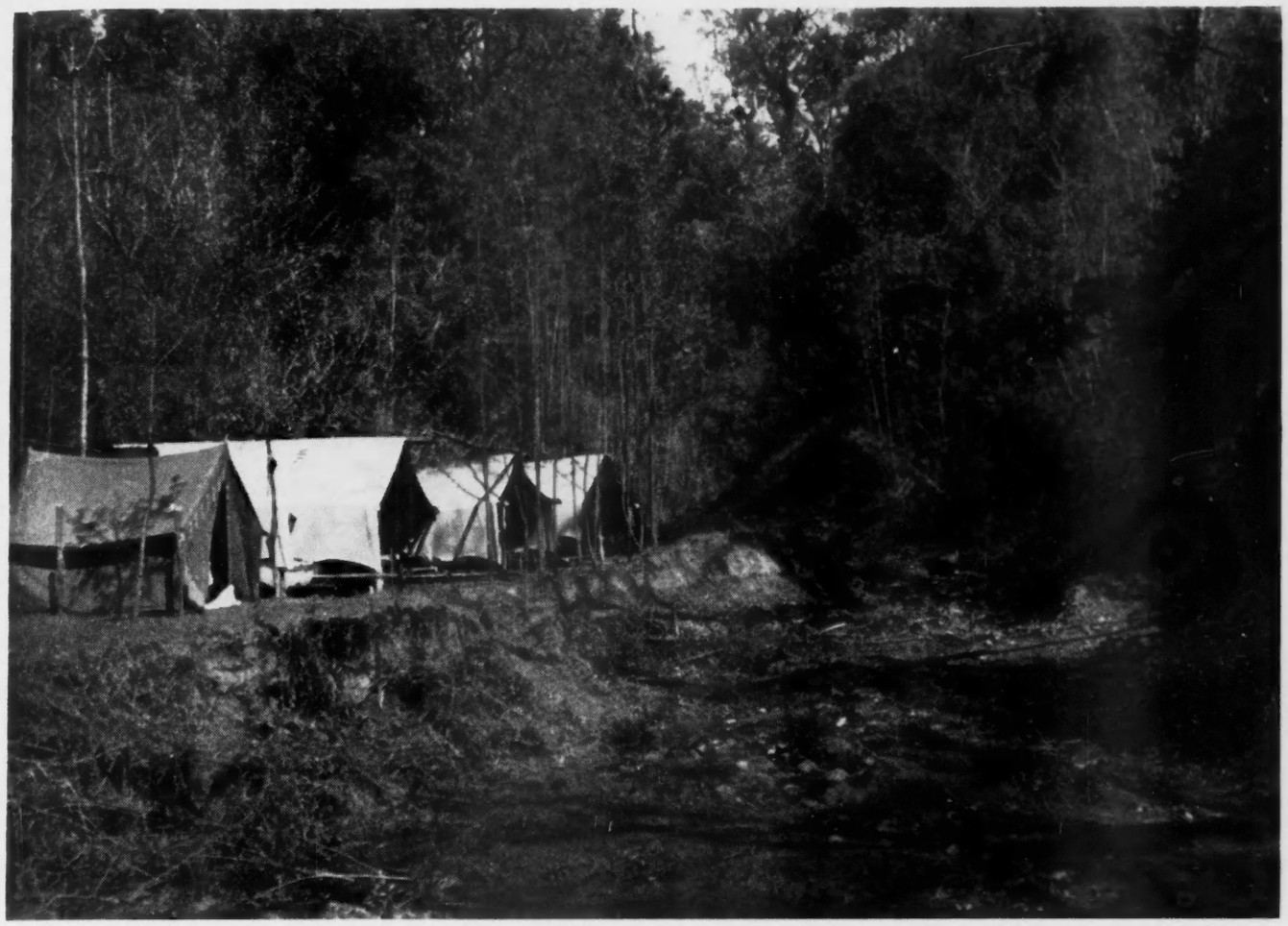
Some authors maintain that a moderate degree of heat and pressure is necessary in the formation of petroleum. However that may be, the interesting point is that metamorphism should be entirely absent or at least have been present in such a slight degree as not to destroy or volatilize the petroleum which might originally have been present nor to annul the indispensable physical characteristics of the oil-bearing sands.

6) Having solved the stratigraphic problem and established the existence of rocks possessing the characteristics necessary for the presence of petroleum in the general area, there remains the solution of the structural problem which is to determine the actual form in which the sediments have been laid down following distinctive geological epochs.

During geological epochs the rocks were subjected to processes of deformation and it is now necessary to ascertain or select those rocks which are most favorably laid down so as to form suitable receptacles or traps for hydrocarbons. Thus the solution of the structural problem becomes the third step in oil exploration and is directly tied in with

About the Author

ING. Juan J. Zunino, geologist in charge of exploration in the Northern District of Argentina for Yacimientos Petroliferos Fiscales, was graduated as petroleum engineer from the University of Buenos Aires. He joined YPF, official agency operating the oil industry in Argentina, in 1932. His activities during the following nine years which took him into many unexplored regions of the country, qualified him to discuss the problems outlined in the present article. In 1942 he was sent to the United States to study exploration and production methods and worked with Phillips Petroleum Company in Oklahoma and other parts of the Mid-Continent. Returning to Argentina, he was placed in charge of oil exploration activities in the sparseiy settled northern sector of the country.



Geological camp in the Selva Saltena, Argentina

the corresponding investigations into the stratigraphic problem and the actual occurrence of petroleum.

Suitable Traps Defined

7) The study of the structural problem unfolds various general types of suitable receptacles or traps, provided hydrostatic conditions are favorable.

The absence of water may refute the anticlinal theory and account for the fact that commercial deposits of hydrocarbons have been encountered in synclines. On the other hand circulating waters under excessive pressure can dissipate such deposits especially where closure is insufficient to retain the hydrocarbons. That is the reason why some structures, especially those located high above sea level or in mountainous regions, have contained water only, notwithstanding the fact that other necessary conditions were favorable.

The indispensable conditions which are being defined are generally affected by certain factors that further complicate the solution of the four problems already mentioned.

For example the porous formations, (point No. 2) may not be continuous and their characteristics may vary from place to place, thinning out in some areas, forming isolated lenses, or affected by faulting causing fracturing or discontinuity. Their porosity also may be affected to a point where it has been reduced to zero or to a point where the rocks no longer can carry fluids.

The impermeable cap over the producing formation may be of sufficient thickness at one point but too thin at another to be effective or may even be absent as a result of erosional action.

Source beds vary from place to place in their capacity to generate petroleum and since the origin of petroleum is still problematical all that can be done is to evaluate the hypothesis which, although it undoubtedly serves to point our way in exploration, at other times leads up a blind alley.

Sub-Surface Complications

The structural problem cannot always be satisfactorily solved and in many cases there exist tectonic sub-surface complications that destroy the value of suitable surface geological manifestations, or vice versa.

The disconformities also constitute an important factor which do not always result favorably. Many important accumulations have been trapped against disconformities but at the same time considerable oil has been lost because of this erosional phenomenon. The preservation of oil during a process of erosion is possible only under special circumstances, as has already been established by G. E. Dorsey.

But unfortunately, it is not always possible to predict these favorable circumstances before drilling. On the other hand disconformities signify in the vertical sense a variable disconnection of the formations to be explored thus multiplying the problems of exploration.

Interior and Flanks

Within a large sedimentary body it is also impossible to determine which areas might be the most propitious for the generation and accumulation of petroleum. This makes it incumbent to explore not only the interior of the area under investigation but the flanks as well. A. I. Levorsen places great significance on flank exploration, basing his conclusions on the fact that many important accumulations have been developed on the flanks of great regional features in some of the world's greatest oil producing areas. By taking into account the age at which closure took place and the capacity for entrapment, the author

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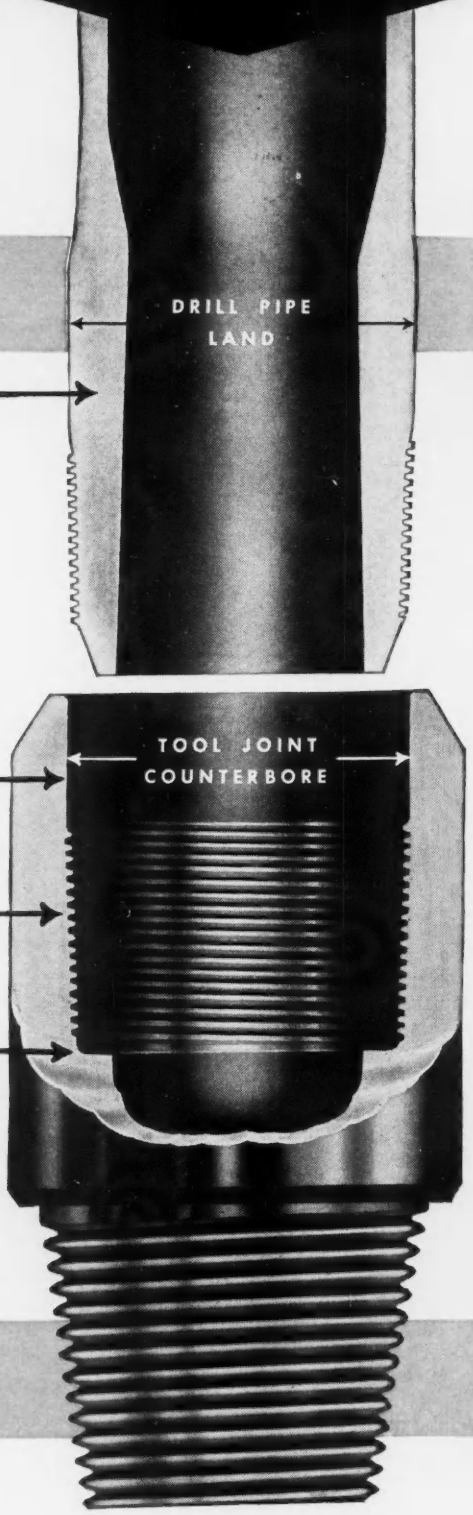

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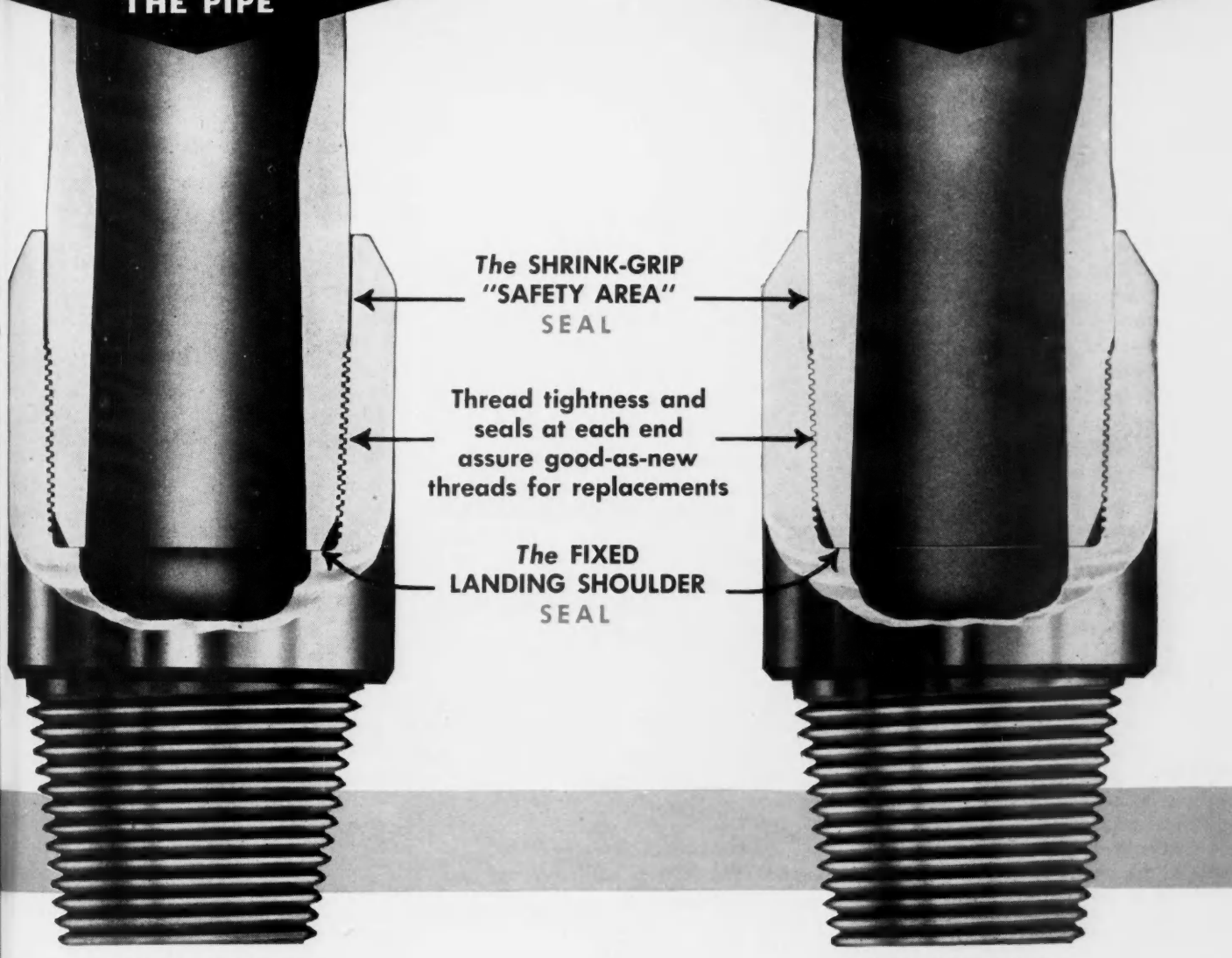
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added two more factors that must be taken into account.

The writer has not attempted to discuss all the factors incident to accumulation since to do so would take him beyond the present scope of this article. However, those already mentioned indicate the broad problems which must be solved before commercial production can be found.

Methods of Exploration

The solution to these problems, weighted with so many unknown factors, is possible only when the geological information obtained is concise and clear. Unfortunately it is not possible to obtain all the necessary data and therefore some of these problems must remain unsolved.

Two principal methods of exploration are available to obtain the information necessary to solve problems already discussed. They include geological studies of those areas which are irregular and have been subjected to disturbance where outcrops are in evidence, and a study of subsurface cross-sections revealed through drilling as well as geophysical information in areas which are flat and where no rock outcrops exist.

The science of oil exploration is constantly being improved. There are also auxiliary methods such as geochemistry and geoelectronics which contribute their share toward a solution of the overall problems in oil exploration although the latter have not yet become established in the front line of the science of exploration.

Thickness and Age

Of the two points corresponding to the problem of stratigraphy, the first method is most likely to afford an answer. Through this method it will be possible to determine with exactitude not only the thickness of the sedimentary columns but also the age of the formations, their general physical characteristics, and the existence of the necessary and indispensable cap required permanently to entrap the hydrocarbons.

In zones where there are no outcrops the stratigraphic problem cannot easily be studied and solved. Even if the thickness of the sedimentary columns can be determined through the seismic refraction method the other questions remain unanswered and can be determined only by drilling a well to sufficient depth. Therefore, this problem can be definitely solved only in areas of outcrops, but remains undetermined in flat regions such as are to be found in the expanses of Buenos Aires Province and other sections of the country.

The second problem, that of establishing that the area under investigation is favorable for oil and gas accumulation, can be determined only in areas of outcrop. While Trask was developing his theory concerning source beds he had to contend with results which frequently were inconsistent with his conclusions. This poses an inconvenience which might be solved in certain zones of unaltered exposures. However, the writer fears that the answer to this problem can be obtained only by deep drilling.

Continuing the discussion of the problem concerning the existence of petroleum, it must be decided whether metamorphism or the lack of it is sufficient evidence to solve the fifth unknown factor and this study can be made only in areas of outcrops.

Problem of Accumulation

The structural problem in general can be solved by surface or sub-surface geological studies or by geophysics; on the other hand the problem of accumulation remains unsolved.

It can therefore be established that only points one and six can be conclusively determined by geological and geophysical methods. But the other points, except under the most favorable circumstances, at best remain but partly determined. Having utilized to the utmost all available geological and geophysical methods, we find it still necessary to resort to other means in order to solve the factors still remaining.

To date the only method to complete our exploration picture is to drill a well to sufficient depth and to study cuttings, cores and electriclogs. The first well, drilled primarily to obtain sub-surface data, must be located at a point where the most information can be obtained at least cost. If this bore hole can furnish the answer to all the unknown factors except the sixth, then the area acquires importance as a possible petroliferous zone and it is then necessary to make a detailed study of the structural problem, (Point No. 6), employing the most appropriate method.

Once a structure has been localized and defined, and meets the requirements outlined in Point No. 7, a second well should be located and drilled for the purposes of actual discovery. Under exceptionally favorable conditions the first exploratory well may not only serve to supply the answers to the exploratory problems but may also open up a new area of production.

Theoretically, it would appear that only two wells are necessary to open up a new oil field. This, unfortunately, is far from true. In reality many wells are required in order to provide all the answers to the unknown factors which have been discussed. Statistics derived from operations in the United States show that between the years 1859 and 1945 inclusive, 1,126,727 exploratory and producing wells were drilled. This large number naturally contributed significantly to the knowledge of subsurface conditions and to the success of exploration in general. For this reason the table which follows cannot compare directly with activities in other countries where exploration has not advanced as rapidly and where even, in many instances, suitable geologic surface maps do not exist.

The number of wells reported in THE OIL WEEKLY, volume No. 120, No. 11 (February 11, 1946) show that in the nine years between 1937 and 1945 30,195 exploratory wells were drilled as follows

Outposts and new producing horizons—	
Productive	2179
Dry holes	206
Wildcats—	
Productive	3038
Dry holes	24,772
Total	*30,195*

Of the total wells drilled, 17 percent were successful, but if we discount the outpost wells and wells drilled to new producing horizons, it will be seen that in order to effect the 3038 discoveries in new areas, 24,772 wells were drilled, or a ratio of eight dry holes for every discovery bringing the percentage of discoveries against failures down to 12 percent.

Scientific Function

From the above figures it would seem that finding oil is a matter of guesswork and not a scientific function. The fallacy of this impression can be seen by referring to the *Bulletin* of the American Association of Petroleum Geologists, Vol. 29, No. 11 (November, 1945). There it will be seen that 14 percent of all exploratory wells drilled between 1938 and 1944 which were located on geological and geophysical bases were successful whereas only 6 percent of wells drilled without the benefit of technical information opened new production.

In conclusion it can be seen that all known methods of exploration must be rigorously and exactly applied if the unknown factors surrounding the commercial accumulation of oil and gas are to be determined. It is true that current methods are frequently insufficient to solve all the problems but it is equally true that in their use the geologist and the oil operator have a powerful weapon which will diminish the margin of error in the task of discovering new sources of petroleum.

Acknowledgment

The author wishes to thank Yacimientos Petroliferous Fiscales for permission to present the above article.

Geology of Denmark

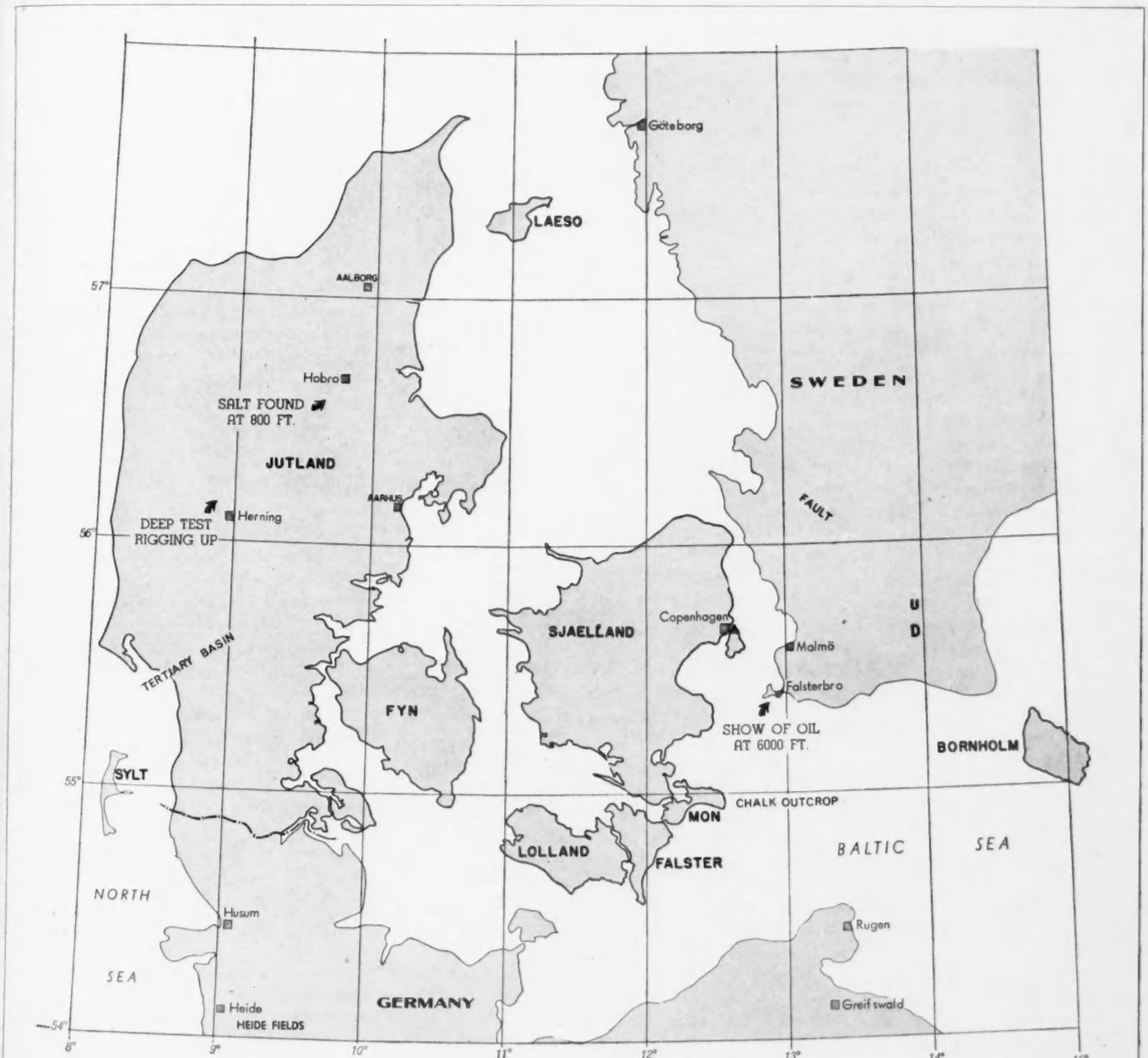
With an areal extent half that of the state of Maine, the Kingdom of Denmark is witnessing renewed attempts at oil exploration after a lapse during the war years. Formation data on thousands of water wells have aided in the location of many structures, and drilling is expected to commence soon on at least one deep test this year.

LOGS obtained in drilling some 33,000 water wells in the Kingdom of Denmark have greatly aided the oil exploration program in that country.

Supplementing the inadequate rainfall (approximately 27 inches annually), 33,000 shallow wells have been drilled in the 10 million acres of land area of European Denmark to supply the needed water for the agricultural and dairy industries. It is these two industries upon which the nation depends since agricultural products are its main exports. Because of the importance these water wells have assumed in the economy of the nation, detailed records have been kept on the formations penetrated by the drill. Correlation and study of this information not only aided in the location of water reservoirs for the agricultural industry, but it has been a very important factor in the exploration for oil in that country.

The country is accessible in all districts by a good road system, and there are no rough hills, the highest elevation being only 570 feet. Most of the country is less than 200 feet above sea level.

Denmark has little or no mineral resources of proven value. For its fuel supply, it must depend upon imports, supplemented by small amounts of lignite and peat of poor fuel value. The



Maps Show Major Oil Developments in Denmark

manufacture of Portland cement was developed by the Danes who obtain the raw material from Senon chalk which outcrops in northeast Jutland. The relatively hard water (as much as 400 parts per million is used in many municipal systems) comes in a large degree from fractured and weathered upper layers of this same Senon chalk. Where these formations lie below the sea level, the water is mixed with salt water from the bays.

The surface outcrops are of glacial deposits except that at the east end of the island of Mon, where there is an outcrop of the Senon chalk.

Deeper Geology

One of the great faults of Europe has been mapped by outcrops and geophysical work, and extends across the island of Bornholm and northwest across the southwest tip of Sweden (see map). The Swedish government has studied the area southwest of this fault east of Copenhagen, and although the throw of this great fault cannot be calculated now from drilling, it has been estimated to be 15-20,000 feet based on magnetic and gravity meter surveys. The upthrow is to the northeast and the downthrow to the southwest. Just in front of this fault (see map), a show of oil has been recorded at 6000 feet in a recent Swedish well at Falsterbo on the Skanör peninsula, and that country plans further exploration of the area on structures roughly parallel to the fault line. Since these structures lie just across The Sound from Sjaelland, it is therefore likely that similar structures are present below that Danish island.

Exploration by wells elsewhere in Denmark has shown the existence of shallow salt domes in north Jutland. Age of the salt in these domes was assumed at first to be Zechstein of the Permian. However, salt deposits in northern Germany near Hamburg have more recently been considered to be somewhat older, namely Rotlugendes of the Lower Permian, and the salt in Denmark may in part also be of this age. The last salt dome to be drilled in Denmark was near Hobro in northeastern Jutland, where salt was reached at a depth of about 800 feet.

Prospects for Oil

Assuming a deep basement rock and formations similar to those which exist in northern Germany, there are these likely prospects for oil: (1) the Senon chalk beds which produce water so generally in Denmark, (2) the lower Cretaceous, (3) several distinct zones in the Jurassic, and (4) the Permian.

Although recent tests in Denmark have been on piercement type domes, a rig is up for a test of a deep structure near Herning (see map).

FOREIGN GUESTS OF LOS ANGELES NOMADS—Foreign guests at the June meeting of the Los Angeles Chapter of Nomads are shown above. They are, left to right, standing in back row: H. E. Keck and R. A. Davis, Iraq Petroleum Company; Q. D. Turner, Mene Grande Oil Company; J. R. Dunn, Colombia Petroleum Company, and T. C. Oakes, Irag Petroleum Company. In center row, left to right, are G. F. Harvey, International Petroleum Company, Peru; R. J. Bowman, Standard Oil Company; K. R. Jauman, Iraq Petroleum Company, and C. R. Devine, Drilling & Exploration Company. Seated, left to right, are A. Norcot, International Petroleum Company, Peru; C. T. O'Connor, Trinidad, B.W.I.; Don Rowe, Beal Franklin Weaver and Dewey C. Mong, all with Servicio Thomas, Venezuela.

Staff Changes Are Made By Socony in Venezuela

The Socony-Vacuum Oil Company of Venezuela has made several organization changes which became effective July 1, and include promotion of Paul W. Brower as assistant to the management for all Venezuelan operations with headquarters in Caracas.

H. I. Fry, manager in Caracas for some time, has completed his tour of duty in Venezuela and will return to domestic operations in the United States. Frank L. LeRoy, Division Geologist has been named manager of the eastern division replacing Brower, and will continue to make his headquarters at Anaco. Paul Greig, Jr., has been named division geologist for the eastern division. Robert Seigel, president of Socony-Vacuum Oil Company of Venezuela, continues to make his headquarters in Caracas.

Colon Company Opens New Western Venezuela Field

Colon Development Company, an affiliate of the Royal Dutch Shell group, has completed its West Tarra 2, wildcat in the West Tarra area to open a new field in the extreme part of Western Venezuela, near the Colombia border. A drill stem test had been reported in this well nearly a year ago. It was made after going into the Cretaceous limestone at 6828-6885 feet, and flowed high-gravity oil at the rate of 2000 barrels daily.

The well was drilled ahead, delayed by a fishing job below this point, and was completed last week in a lower formation. Interval tested in final completion was at 8810-9173 feet, total depth, and the well flowed at the rate of 1500 barrels of 41-gravity oil daily through a ½-inch choke. The company announced completion took in only the bottom horizon, and that subsequent wells would make tests of the upper horizon at 6800 feet.

It has also been reported that the Shell Group's Curacao, 2-A, deep well drilled to 115,106 feet east of the Lake Maracaibo shore fields, is preparing to perforate casing for production tests. It had set a full string of casing at total depth, but this would be the first resumption of operations since last fall.

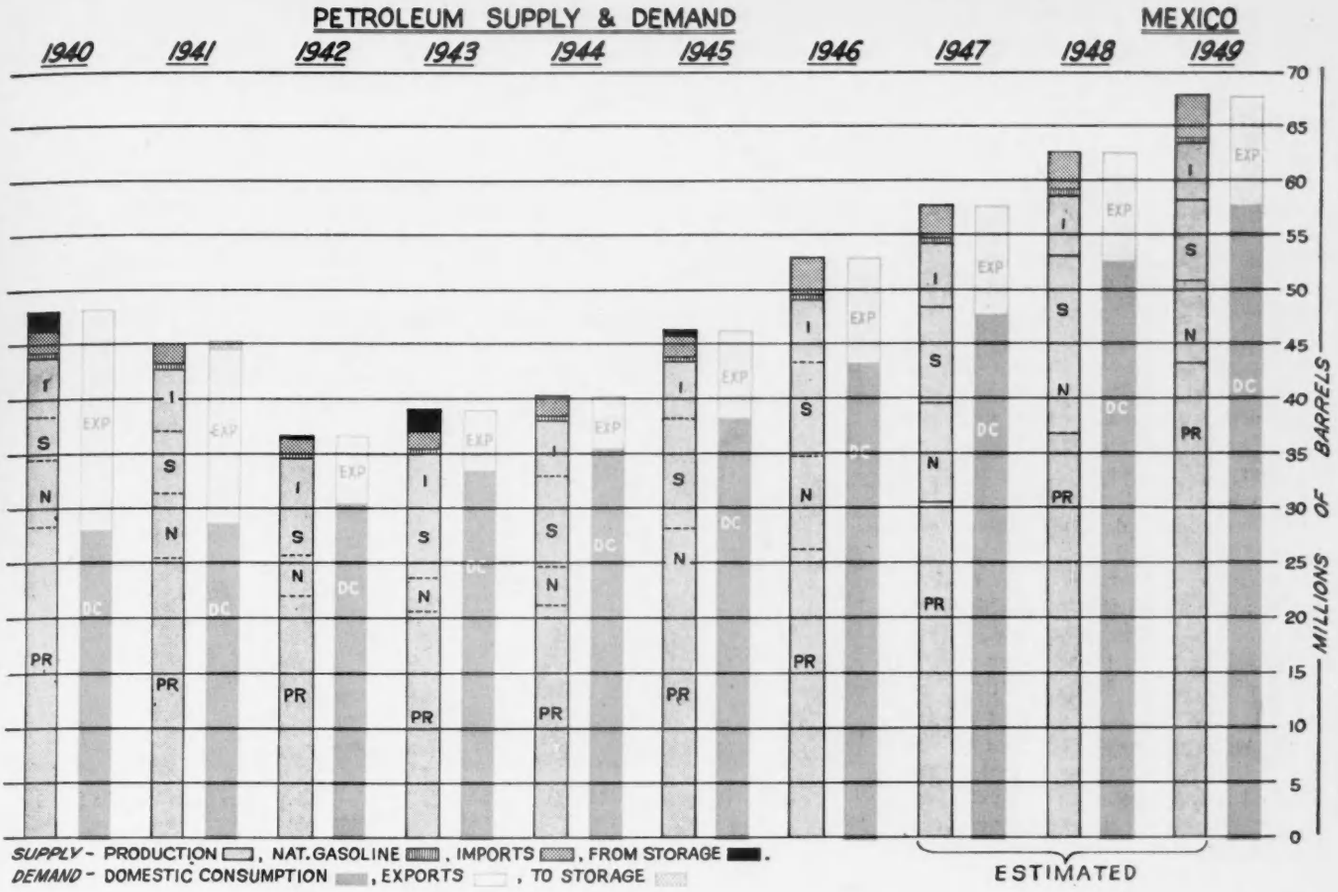
Steamship Firm Extends Service in Far East

Approval of the application of Lykes Bros. Steamship Company to extend its Far East Service to include the Netherlands East Indies and the Straits Settlements will provide U. S. Gulf ports with added facilities that have long been needed, Solon B. Turman, executive vice president of the company, has announced.

U. S. products which are expected to move through Gulf ports to this Far East area include textiles, iron and steel goods, machines and tools, fertilizers, naval stores, cement, paint, cigarettes, paper products, petroleum products and chemicals.

Test Below 8000 Feet

The Australasian Petroleum Company has reached a depth of 8036 feet in the Kariava well on the island of Papua. This well is thus the first in the whole of Australasia to pass the 8000-foot mark. It is planned to drill to 10,000 feet if necessary in the search for a suitably porous reservoir horizon.



MEXICO'S Oil Consumption SOARS

DOMESTIC consumption will be a controlling factor in Mexico's petroleum supply and demand during the next three years. A projected 10 percent increase, developed on the accompanying chart, is considered to be conservative if the possibility of a general collapse in Mexican economy as a whole is disregarded.

The rise in domestic consumption of petroleum in Mexico from 28,056,000 barrels of 76,660 barrels daily in 1940 to 43,585,000 barrels or 119,415 barrels daily in 1946 reflects an average of about 9 percent increase per year for the whole period but this rate has been accelerating during the last few years. In 1946, for example, the rate of increase was 13.9 percent.

Future Exports Same

Future exports have been tentatively estimated at the same rate as 1946 exports—about 10 million barrels per year. It is quite obvious that Pemex will curtail exports in favor of meeting the domestic demand, should such a choice be required, but it should also be recalled that processing crude to meet the demand for gasoline—which has grown from 13,640 barrels daily in 1940 to 23,100 barrels daily in 1946, an overall average increase of 10 percent per year—is bound to result in an excess of other heavy products which Pemex will want to export. Thus, even though exports are curtailed on principle, it can be conceded that some 5 to 6 million barrels (or 10 percent of the scheduled production) must go to the export market.

Petroleum supplies from new fields have been left out of this picture. Pemex is engaged in exploratory work which may well bring results but, from a practical standpoint, even if a new field were discovered tomorrow it is unlikely that such a field could be developed sufficiently within three years to affect the projected outlook.

Of the three existing important sources of supply shown on the chart, withdrawals from stocks will probably be at a minimum from now on. During the period shown, stocks of crudes and products in the terminals and the field have been reduced by some 3,700,000 barrels and the present storage of about 12 million barrels may be considered minimum working requirements.

Imports Increasing

Imports are shown increasing at the rate of 10 percent per year, again on a conservative basis. 1946 imports of 3,380,000 barrels were 55 percent over 1945 imports of 2,176,000 barrels. However, it is considered probable that Pemex will prefer to hold down imports by meeting the domestic demand from domestic production, if it is at all possible to do so.

Production expected from the old fields: I—the Isthmus area, S—the Southern Fields and N—the Northern District—has been set up at an estimated

potential for 1947 and declined thereafter. Poza Rica, on the other hand, has been used to supply the difference between the production from the old fields and the scheduled demand for crude.

As developed on the chart, total production required in 1949 will be about 63,440,000 barrels. Of this total, the three old fields are considered capable of furnishing some 20 million barrels and Poza Rica is called upon for the balance of 43,440,000 barrels.

To meet this schedule, Poza Rica will have to produce at an average of 119,000 barrels daily in 1949. The field has never been produced at anywhere near that rate. The highest monthly production—February 1942—was at the rate of 98,000 barrels daily and that was for that month only. The daily average for the whole 7 year period shown on the graph has been 65,080 barrels and the field actually averaged 71,620 barrels daily for 1946.

Thus it appears that Pemex will be faced with the problem of putting Poza Rica to the test within the next few years with the overshadowing danger that if the field is over-produced or mishandled in any way, Mexico's petroleum supply situation will become very serious immediately.

OIL MENS COURTESY TICKET ADMIT ONE
Tulsa Chapter of The NOMADS
Silver Anniversary
INTERNATIONAL PETROLEUM EXPOSITION
Tulsa, Okla., U.S.A. May 15-22, 1948
No. 1

NOMADS INVITE DR. ABREU TO TULSA OIL SHOW—An invitation to attend the Silver Anniversary of the International Petroleum Exposition and Congress, to be resumed in Tulsa, Okla., May 15-22, 1948, has been extended to Dr. S. F. Abreu, chief of the chemicals and minerals division of the National Institute of Technology of Brazil. The giant ticket will be presented by Dr. Abreu to his chief, Dr. Fonseca Costa, director general of the Institute. Anthony Gibbon, district editor of World Oil in Tulsa, is shown above explaining how the artist highlighted the Silver Anniversary medallion of the oil exposition. Others shown are, left to right, Stanley W. Wilcox, president of the Tulsa chapter of Nomads; National Regent Shep Miers, H. M. Cosgrove, executive secretary, and executive committeeman of the chapter.

Four Leduc Wells Making 150 To 200 Barrels of Oil Daily

Imperial Oil Ltd.'s 4 Leduc completions are on steady production with yield per well ranging from 150 to 200 barrels daily, with choke sizes ranging from ⅛ to 3/16-inch. During the first 23 days of June, the 4 wells produced 12,771 barrels, boosting cumulative yield to 29,901 barrels. All are making water-free oil of 40 to 41 gravity. Gas-oil ratios at all 4 wells are around 500 cubic feet per barrel.

On June 23, 7 wells were drilling in Leduc field within a 3-mile radius of the proven area, while 6 more were in preliminary stages of rigging. In addition, 6 wildcats had commenced drilling on other prospects within a 50-mile radius and 4 more were preparing to spud. By early July, 23 rigs are to be in operation in the region.

Resumption of Operations In East Indies Uncertain

Recent political developments in the Netherlands East Indies, including resignation of Premier Sutan Sjahrir and assumption of full powers by Indonesian Republic President Soekarno, have renewed concern regarding possible early solution of problems delaying Indonesia's return to active oil operations.

The Premier is regarded as the only moderate with any great influence in the Republic, and it was through his efforts and cooperation that the agreement was signed several months ago which gave hope of again permitting free access to foreign operators. With his resignation it is felt that a valuable ally has been lost. There has been some rehabilitation work done in refinery areas in portions of the Republic, but since the cessation of World War II, and the civil conflict that followed, most of the prewar operators have found it impossible to return to their properties, even for detailed inspection trips.

To some extent operations have been resumed in Borneo, but the Java and Sumatra areas have made practically no progress. Now the outlook is far from bright, according to opinions of observers interested in again reestablishing the Indies as an important source of crude and refined products.

Canol Oil Bids Rejected

The Foreign Liquidation Commission has rejected all three bids for the Canol oil pipe line and refinery in Canada and Alaska. In rejecting the three bids the commission said it had reviewed the proposals and found them "unacceptable to this office." No new date for bidding has been set.

Spain's First Wildcat Oil Test Preparing to Spud

At latest report, Spain's first wildcat oil test was scheduled to spud some time last week. The rig, an 8000-foot medium duty outfit, has been on the ground for some time, and has now been assembled and is ready to start drilling.

The well, on the Oliana prospect in the Province of Lerida, 60 miles northwest of Barcelona, is being drilled by Compania Espanola de Petroleos Scientificas Investigaciones, a company owned half by local interests and half by Socony-Vacuum Oil Company, and operated by the latter. It is being drilled on incomplete surface geology indicating an anticlinal structure, and it is thought that the 8000-foot rig should carry deep enough to test the Tertiary and possibly some deeper formations.

New Alberta Acreage Law

The Canadian Province of Alberta has promulgated a regulation to limit the amount of acreage any one oil company may hold. Instead of the present limit of three 200,000-acre blocks, a company may not now hold more than two non-adjoining 100,000-acre blocks. Not retroactive, the ruling will apply only to crown oil rights, but this will affect most of the Alberta oil rights.

IS VITALLY IMPORTANT IN CEMENTING

STURDY, SIMPLE CONSTRUCTION

The assembly of Baker Model "B" Casing Centralizers (Product No. 910) consists of only three kinds of parts—Collars, Springs, and Stop Rings. Two Collars (positioned at each end of the Centralizer) hold the Springs in place and space them properly. The Collars are *not attached* to the casing, and the Springs are not welded to the Collars. The Springs are held in position by spacer lugs having slots or notches between them, and the turned down ends of these lugs hold the Springs in place. The Springs, which bear the brunt of the load, are formed with a hook at each end, and are made of 3/16" by 1 1/2" spring steel, shaped in a bending die and heat treated to secure ample strength combined with maximum flexibility.

Stop Rings (one at each end) are the *only* parts of the Centralizer attached to the casing, each Stop Ring being plug-welded to the string at four points. The ends of the Springs are hooked over the Stop Rings, and Springs and Collars are left free to turn on the casing.

SAFE, POSITIVE OPERATION

Figure 1 (opposite page) shows the Stop Rings (1) plug-welded at (2) to the casing, with sufficient space left between Collars and Stop Rings (at 3) to permit the maximum elongation of the Springs, even if they were compressed tight against the casing.

Figure 2 shows the casing being run into the hole with the lower Stop Ring engaging the hooks on the lower ends of the Springs (4) and PULLING the Centralizer through the hole (or casing)—NOT PUSHING it through. When a restriction (5) is encountered, the Springs *compress uniformly* and elongate in an upward direction, moving the top Collar towards the upper Stop Ring (6). During the downward travel of the casing, the upper Stop Ring is never in contact with either the Collar or the upper hooked ends of the Springs, so that this upper Stop Ring is unable to exert on the Springs any PUSHING force that would tend to buckle or distort them.

If the casing has to be raised for any reason, the above action is reversed, and the Centralizer assembly is PULLED (rather than PUSHED) *up the hole* and past any restriction.

You will find the Baker Model "B" Casing Centralizer illustrated and described on Pages 366 and 367 of the 1947 BAKER (or Composite) CATALOG. Technically minded operators should read Baker Broadcast No. 21, which contains details of field applications and engineering details on this important equipment. Any "Baker Man" or Baker office will be glad to deliver *your* copy.

BAKER OIL TOOLS, INC.

Houston • Los Angeles • New York

THESE FACTS ARE INTERESTING

Note in Figure 3, below, how casing hanging vertically in a slightly off-vertical hole, results in a dangerous condition for successful cementing. Contact points at A and X prevent proper encasement of the pipe with cement slurry. The illustration next at right shows how a Baker Casing Centralizer near the shoe, and another one up the hole, provide the desired uniform annulus to permit placement of the predetermined thickness of cement all through the critical area.

Figure 4 shows casing extending through an intermediate oil zone that is to be protected by cement both below and above the productive sand. Although the hole is deflected only slightly from vertical, danger points exist at X and Y because a uniform sheath of cement around the casing cannot be secured. How Baker Casing Centralizers overcome this condition is shown in the view at right, Figure 4.

Figure 5 shows how Baker Casing Centralizers provide properly centered casing on a C.P. job, and insure the effectiveness of a Baker Metal Petal Basket by allowing its spring-backed petals to contact the formation evenly.

Figure 6 shows how Baker Casing Centralizers are used to center the casing at critical cementing points and provide the best possible conditions for successful squeeze jobs and other remedial work with Baker Cement Retainers. The interesting details of this job are included in the Baker Casing Centralizer Broadcast which will be sent promptly upon your request.

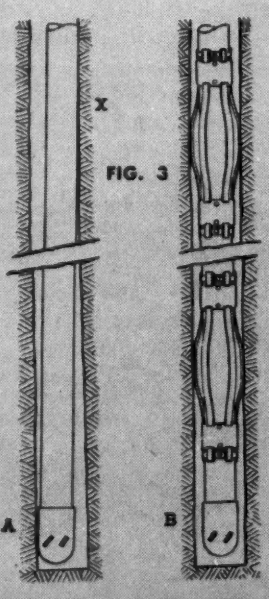


FIG. 3

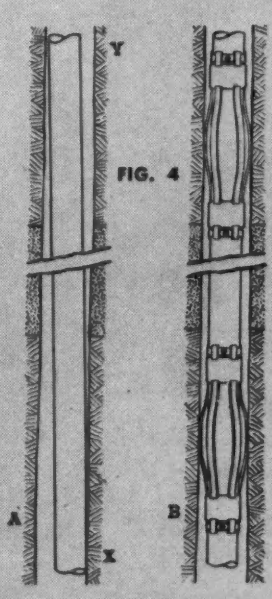


FIG. 4

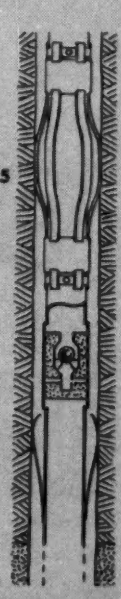


FIG. 5

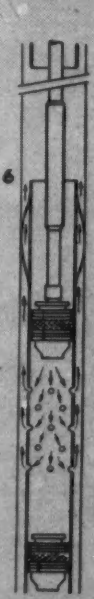


FIG. 6

BAKER CASING CENTRALIZERS

United Nations Get Cooperative Plan For Regulation of Middle East Fields

A proposal has been submitted to the United Nations for regulation of Middle East oil fields by that body. The plan was proposed by the International Co-operative Alliance, whose membership is said to represent co-operatives in 39 nations, with its principal membership in the United States, Britain and Sweden, and its proponents suggested that it favored eventual regulation by the United Nations of all the oil deposits of the world.

As a specialized agency officially attached to the United Nations, the alliance placed the plan on the Summer Session docket.

A spokesman described Middle Eastern oil as a danger spot in international regulations, and said that East-West tension would be decreased in regard to the current spirited competition for oil requirements and acquisition of other portions of the Middle East for prospecting. The five-part plan would call for:

1. Planning and enforcement of conservative measures.
2. Giving all governments the right to buy oil from the Middle East on an equal basis.
3. Barring discrimination as to types of buyers, whether governments, corporations or co-operatives.
4. Prohibition of price discrimination as between governments, or large purchasers.
5. Sitting as a tribunal on complaints from governments, lessees or purchasers.

British American Plans New Canadian Refinery

Expansion of its operations in British Columbia, Canada, is planned by the British American Oil Company.

G. Gerry Godsoe, executive vice president, has announced the company is planning the erection of a new refinery in the Vancouver area as soon as construction costs have decreased.

At present, the company is spending $100,000 on expansion of storage facilities and transport terminal at its plant in North Burnaby, near Port Moody, British Columbia.

Superior's Efforts for Bolivian Grant Slowed

The proposed contract between the Superior Oil Company and YPFB (Bolivian Petroleum Company), has been subjected to such widespread criticism in the press and in the Senate that its approval by the latter body in its present form is considered unlikely, according to a report of the fuels and lubricants section, Office of International Trade, Department of Commerce.

The contract provides for exploratory and development work to be carried on by Superior Oil in exchange for a share of any oil discovered, and is not a concession in the usual sense of the term.

700,000 Tons of Supplies Slated for Middle East

About 700,000 tons of equipment and supplies will be sent to the Near East and Middle East during the next two and one-half years for construction of a pipe line from Saudi Arabia to the Mediterranean, according to estimates of Arabian American Oil Company.

Approximately 35 percent of this tonnage will consist of pipe and casing for the projected 30-inch oil carrier to be operated by Trans-Arabian Pipe Line Company. The remainder of the tonnage will consist of other materials, equipment and supplies required for the construction programs of both companies and the maintenance of existing facilities.

Previous reports reported that a million tons of steel pipe would be sent this summer for construction of the pipe line.

Mexico's Daily Oil Flow During April Shows Boost

April production of crude oil in the north fields of Mexico was 4,097,251 barrels, a daily average of 136,575 barrels, compared with a daily average of 123,581 barrels in March.

An exploratory test, spudded during March in the Cuchillo Parado area, south of Ojinaga, is reported to have picked up a thin layer of salt at 4900 feet. The presence of the salt layer is considered an indication that the structure is similar to those across the border in Texas.

Reports say that another exploratory well is to be drilled in the area around China, state of Nuevo Leon, located midway between Monterrey and Reynosa.

Saudi Arabian Crude Oil Output Has Steady Rise

Saudi Arabian oil production has steadily risen during the year as increases in tanker availability have made additional output possible, until it is now producing at rates slightly in excess of 240,000 barrels daily. An additional 20,000 barrels daily is being produced from Bahrein Island.

One additional rig has been placed in operation, and there are now seven rigs continuously operating in three fields. Five rigs are running in the Abqaiq field, one in North Abqaiq or "Bukka," and two in the Qatif field.

Well Completions in Peru Rise While Producers Drop

The number of wells completed or worked over in Peru rose from 114 during 1945 to 172 during 1946. Oil and gas completions in 1946 totaled 96 as compared with 95 in 1945. However, dry hole completions was boosted sharply to 40 in 1946 as against only 19 the previous year.

Producing wells in Peru at the end of 1946 totaled 2964, a drop from the 3215 producing at the end of 1945.

The drop in total producing wells was due to the abandonment by International Petroleum Company of a large number of low-yielding stripper wells following the end of the war because they were not commercially profitable to operate.

Venezuela Crude Oil Flow Continues to Increase

Production of crude oil in Venezuela during the first quarter of 1947 totaled 104,427,171 barrels, of which 95,949,276 barrels were exported and 7,749,519 barrels refined in Venezuela. Exports of refined products totaled 5,597,854 barrels.

A total of 196 wells were completed during the quarter, of which 10 were exploratory wells. Drilling results were as follows: oil producers, 170; gas producer, 1; dry holes, 15.

Haiti Licenses Granted

The Haitian Bureau of Mines reports that recently the Haitian government granted licenses to explore for oil to two American citizens, each acting separately in his own behalf. The only other license is held by Atlantic Refining Company, which has been active on the Cul-de-Sac Plain.

Southern Lebanon Terminal Reported Agreed Upon for Trans-Arabian Line

By HENRY OZANNE
Staff Writer

Final but unofficial agreement has been reached between Syria and Lebanon by which Trans-Arabian Pipe Line Company's terminal for its Saudi Arabia carrier will be located in South Lebanon. I have learned of this agreement from high Syrian government officials, although the accord itself will not be announced until after the Syrian elections on July 7.

The whole trans-Arabian project has been held up because Syria and Lebanon have failed to agree on a mutually satisfactory program under which both states could share in terminal charges and transit royalties from the line. Repeated negotiations have been undertaken by a joint parliamentary committee representing both Syria and Lebanon, but no solution has been announced. I am able to reveal, however, that Syria and Lebanon have reached the following agreement and that terms of this accord will be disclosed publicly, probably on July 9.

Syria has agreed to yield in its demand that the line's terminal be located in Syria and has consented that the terminal be located in South Lebanon, near Sidon. For this concession Lebanon has agreed to give Syria 50 percent of all consolidated port dues, fixed at 3 cents a ton on all oil handled, plus a proportion of the U. S. dollars sold in the local market by TAPline to obtain its local currency requirements. This dollar proportion between Syria and Lebanon is to be in the same ratio as the share of customs revenues of the two countries—56 percent for Syria and 44 percent for Lebanon.

After this Syrian-Lebanese pact is ratified and announced, Syria must then sign a convention with TAPline, covering transit charges. TAPline already has signed such an agreement with Lebanon under which the company will pay Lebanon a minimum of 45,000 Pounds Sterling a year ($180,000), 25,000 pounds ($100,000) of which is designated as "security" charges, and the balance is transit fee. The transit fee is fixed at 1.5/1000 of a Pound Sterling per ton, and on the estimate of TAPline's movement of 15 million tons yearly (105 million barrels), transit royalties to Lebanon would total 22,500 Sterling a year ($90,000).

TAPline officials estimate that the line would run for about 200 kilometers through Syrian territory (125 miles), and 60 kilometers (38 miles) through Lebanese territory.

Regie Autonome des Petroles' Puymaurin 1, pictured above, was drilling below 12,000 feet on April 29, 1947, and is the deepest test for oil yet drilled in France as well as the third deepest test drilled in Europe. The test, spudded October 20, 1945, is located about 12½ miles north of the company's production in the St. Marcet field.

Poland's Oil Flow Hiked

The March output of crude oil from the Polish fields reached the post-war peak figure of 76,516 barrels. A considerable quantity of plant equipment for the production of synthetic gasoline has now been brought to Poland from Germany and is being installed at Oswiecim. When this plant is functioning at the end of 1948, it is expected to have an output of 148,000 barrels of synthetic petrol a year.

Hall Is Named Official Of Trans-Arabian Firm

H. H. Hall, chief engineer of the Standard Oil Company of California, has been named a director and vice president of Trans-Arabian Pipe Line Company and will devote his time to the planning and construction of the projected 1050-mile Arabian crude carrier. Under the new set-up, Hall will be consulting engineer for Standard of California.

H. H. Hall

Hall was graduated from Stanford University in 1904 and taught civil engineering there from 1905 to 1907. He joined Standard of California in 1910, following three years in the Alaskan gold mining industry.

Second Test Is Spudded In Levant States by IPC

Iraq Petroleum Company has spudded in its second well in the Levant States. Drilling began June 6 at the Baflioun location, near Azaz, Syria, due east of Alexandretta and 15 miles south of the Turkish border. Three weeks earlier IPC spudded in at the Tourbol location, near Tripoli, Lebanon.

Operations in Syria are being conducted by the Syria Petroleum Company, affiliate of IPC, and mark a resumption of drilling in Syria that was started shortly before the war. Forty company and Syrian government officials attended the spudding-in ceremony at Baflioun, including Geoffrey Herridge, IPC general manager in the Middle East.

IPC has been receiving oil field equipment in stepped-up shipments lately and is reaching full stride in its extensive exploration and drilling program covering the entire Eastern Mediterranean region of Asia Minor. All equipment now is coming from Britain. The company plans to spud in at its Dola location, north of Palmyra, Syria, in July, and work has been resumed at the Gaza location, in southern Palestine, where drilling will begin this summer. In addition, new drilling operations are being projected in the Basra and Mosul areas of Iraq and at Qatar on the Persian Gulf.

Exploration and drilling rights have just been obtained by IPC in Transjordan under a concession covering all of that country.

Deep Production Sought as D'Arcy Continues Work in United Kingdom

The D'Arcy Exploration Company (Anglo-Iranian subsidiary) has recently resumed drilling the Formby No. 1 well in Lancashire, England. This well had reached a depth of 6382 feet early in the war but had been suspended since that time. The present depth is 6494 feet and the formations being drilled are sandstones, shales and sandy dolomites of Permo-Carboniferous age.

A small shallow oil pool has been known for some time at Formby where there are a number of local seepages. The structure here appears to be a faulted monocline, the reservoir being Keuper (Upper Triassic) sandstones underlying an impermeable cap rock of glacial boulder clay. The Formby No. 1 well is a deep test whose object is to discover a more prolific reservoir from which the upper oil may have seeped.

The D'Arcy Company is also drilling a test at Perlethorpe, six miles north of the main Eakring field. This test, which has now reached a depth of 3704 feet, is located on a small structure discovered by a seismic survey.

In the Caunton field southeast of Eakring two extension tests are being drilled. The Caunton anticline was discovered in 1943, and has given production from the Millstone Grit series of the Carboniferous.

In Scotland a new test is being drilled on the southern flank of the Cousland anticline in the Dalkeith area of Midlothian. The object of this well, which has reached a depth of 1402 feet, is to provide an estimate of the reserves of natural gas present in this structure. The gas zone occurs in the Calciferous Sandstone series of the lower Carboniferous.

D'Arcy is continuing to carry out a considerable geophysical exploration program. In the Market Drayton area of Staffordshire a seismic survey has now been completed and location for future drilling selected. A seismic survey is being carried out between Market Drayton and Burton-on-Trent to delineate the structure of the Keuper sandstones in this area, where a magnetometer survey had previously been made. A gravity survey is being made of the area between Windsor and Great Missenden, Bucks, and an electrical survey is in progress in eastern Dorsetshire.

The Anglo-American Oil Company have given up their exploration rights over most of the concessions they had previously held. These include 25 prospecting licenses covering some 3500 square miles in the counties of York, Lincoln, Nottingham, Leicester, Derby, Dorset, Hampshire and Wiltshire. The only licenses retained are those covering 12 square miles in Midlothian (Scotland) and 131 square miles in Lancashire.

Shell Earmarks $4 Million For Australian Oil Work

The Shell (Queensland Development Company) Group has embarked on a 4-year program of oil exploration covering 50,000 square miles in the Roma area of Queensland, Australia. It is proposed to spend some $4 million on the execution of this project, which will be carried out without government subsidy. It is intended to drill about 30 shallow holes initially to determine the best location for a deep test which will go to 10,000 feet. In the period 1940-42 the Shell carried out extensive exploration work in Queensland, which included both geophysical and geological surveys, and the present drilling campaign is based on the results obtained.

E. N. Avery is in charge of operations and D. E. Morgan is chief geologist.

An aerial survey is being carried out by R.A.A.F. Mosquito aircraft of a large area at Nerrimadome in Western Australia, where the Freney-Kimberley Oil Company has been working. Army cartographers are assisting in this work which is designed to benefit minor oil concerns.

Oil Output in Roumania Continues to Show Drop

The Roumanian oil industry is passing through a period of acute crisis, and the oil production is steadily declining. One of the principal reasons for this decline is the lack of drilling material.

During January the output was about 2,347,880 barrels; February, 2,124,980 barrels, and March, 2,377,600 barrels. Continued at the present rate, the annual production will not amount to more than 27½ million barrels, considerably less than the 1946 flow.

During the first three months of 1947 only 7518 feet in exploratory wells and 71,156 feet in exploitation wells were drilled. The only new area showing promise is in the Bacau region where five tests have given encouraging results.

Inclement Weather Retards Germany Crude Production

The production of oil from the British zone of Germany continued to be affected by inclement weather and flooding during March. The total production was 294,000 barrels. The figure for April has not yet been released, but it is expected that field production will have improved with the weather, although equipment is still very short. A Berlin report states that teams of British and American geologists are expected to arrive shortly in Lower Saxony to make a thorough search for oil.

In the British zone, two synthetic gasoline plants have resumed operations, using the Fischer-Tropsch process. These are the Gewerkschaft Viktor at Castrop-Rauxel (wartime capacity 280,000 barrels a year) and Krupp Treibstoff at Wanne-Eikel (wartime capacity 450,000 barrels). The present yield of these plants is approximately 1200 and 500 tons a month respectively.

Figures have now been released of German production and drilling by fields in 1946. During the year a total of 21 exploration wells were drilled with a total depth of 76,030 feet. Only one exploration well was productive. Eighty-nine exploitation wells were drilled with a total depth of 185,307 feet, of which 48 were productive.

Production in the zone during 1946 amounted to about 4,498,774 barrels, a sharp increase from the 3,800,426 barrels produced in 1945.

Refining Company Formed By AGIP and Anglo-Iranian

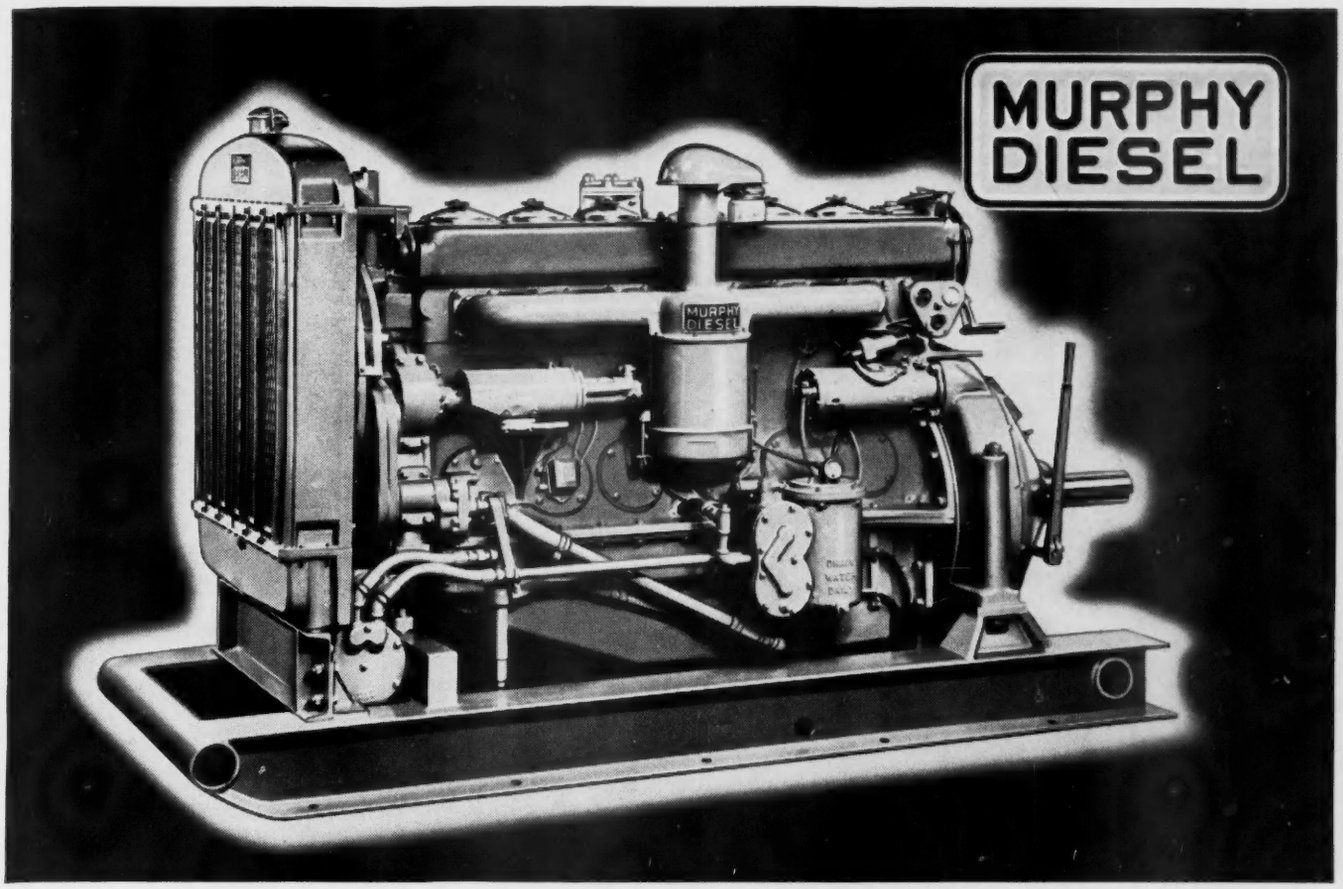
Azienda Generale Italiana Petroli and Anglo-Iranian Oil Company have jointly formed Industria Rafinerie Olii Minerali per l'Industria del Petroleo in Italia.

IROM is to receive Middle East crude to the value of $8 million which will be treated at the Porto Marghera, Venice, refinery, which will be enlarged to a capacity of 3 million barrels a year.

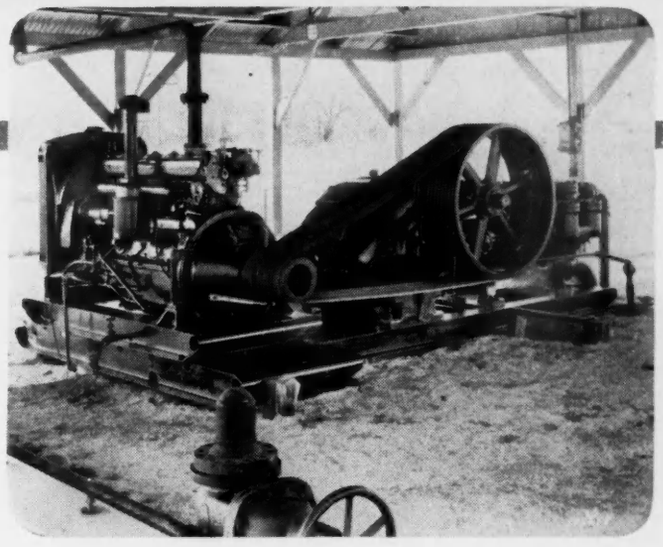
Discussions are reported under way between Italy and the Soviet Union with regard to the Albanian oil fields.

Oil Search in Ireland

It is reported from Eire that the government is preparing legislation to empower a semi-state organization (Minairai Teoranta) to undertake a thorough exploration for minerals and petroleum in Ireland. It is planned to spend £500,000 in this project, which will include the drilling of test wells in the west of Ireland and on the Atlantic shelf.



This ME-66 MURPHY DIESEL, 6-cyl. 6 x 6½" 150 HP continuous, 180 HP intermittent, powers a GASO Pump and Burner Pump of the Ajax Pipe Line Co., at Racine, Missouri.



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Royal Dutch Crude Oil Production During 1946 Attains All-time Peak

The Royal Dutch Company, in its annual report for 1946, said it had achieved a petroleum output through its producing affiliates of 230,078,000 barrels, an all-time peak.

Venezuela was the greatest single source of the company's production during the year: 116,082,000 barrels as compared with 95,976,000 barrels in 1945. At the close of the year, production for the accounts of subsidiary companies in Venezuela had reached a volume of approximately 357,450 barrels daily.

Exploration in Venezuela has been vigorously pursued and several deep wells drilled, including the Curacao 2-A, on the east shore of Lake Maracaibo, at 15,106 feet the deepest well in the world outside the United States. Expanded facilities at the Punta Cardon refinery in northern Venezuela will become partially available some time in 1948.

Colombia Activities

In Colombia, new concession acreage procured in the Llanos region during 1946 brought the total held in Colombia to more than a half million hectares (more than 1¼ million acres). The company is one of the two actively engaged in wildcat drilling in this vast region.

The Casabe field, operated by a Shell subsidiary, which shipped its first oil in June of 1945, had built up its production to approximately 12,500 barrels daily at the end of 1946, and produced 3,209,000 barrels during the year.

The report indicates steady progress on the program of increasing pipe line capacity in Iraq to allow an outlet for 97 million barrels yearly instead of the present 30 million barrels. The company owns a 23.75 percent interest in the Iraq Petroleum Company which operates the Iraq properties, and which the report says completed four producers in the Kirkuk field during the year. The new 16-inch pipe line to Haifa is expected to be ready early in 1949, and the pipe line of the same diameter to Tripoli in the course of 1950.

The company plans to increase the capacity of the Haifa refinery from its current 30 million barrels yearly to something between 60 and 65 million barrels. The company's share in Iraq production amounted to 7,625,000 barrels, compared with 8,540,000 barrels the previous year.

In the Netherlands East Indies, disturbances of political, economic and social nature have continued since cessation of actual hostilities of World War II. In some areas no progress at all was made, but in others like Tarakan production was up to more than 130,000 barrels a month, still only one-third of prewar capacity, at the end of 1946. Refinery installations at Balik Papan were repaired and reconstructed. Operation of one unit started June 24, and a second on October 9, with an estimated capacity of something like 8000 barrels daily, although shortage of storage capacity and other units has kept the throughput below this figure. In southeast Borneo fields some repair work on damaged wells has been done and drilling has actually started on new wells.

The report announced plans for the building of a new refinery on the island of Muara, which will ultimately replace the Lutong plant which had a capacity of 20,000 barrels daily before the war.

It was estimated that work in the Seria fields in Brunei and the Miri fields in Sarawak by the end of 1946 would result in a potential production of 40,000 barrels daily.

Progress in France

Work accomplished in France consisted of restoration of the refinery at Petit-Couronne which was placed in partial operation by the end of the year for the handling of Venezuelan oil. Rehabilitation has progressed far enough to permit processing of some Iraq crude.

In Hungary, the report mentioned that "the petroleum industry is entirely under the supervision of the Hungarian government, which in turn receives its instructions from the Russian authorities."

Resumption of Roumanian operations on the prewar basis as "extremely gloomy," the report said.

In the Netherlands, 17 producing wells were completed during 1946 with crude production having increased to a total of 436,000 barrels. The work of rehabilitating the tanks and refinery at the Pernis cracking plant has resulted in operating at the prewar throughput level of 15,000 barrels a day. Plans for new building on the Pernis location include new chemical plants.

Standard of California Promotes T. L. Lenzen

T. L. Lenzen has been appointed general manager, Eastern Hemisphere operations of the Standard Oil Company of California. In this new position, Lenzen will continue, on an expanded scale, the duties he has performed since 1944, when he was made assistant to the vice president of foreign operations.

T. L. Lenzen

His work will include contact with the foreign producing and marketing companies in the Eastern Hemisphere with which Standard of California is affiliated.

Northern Sakhalin Crude Output Will Be Boosted

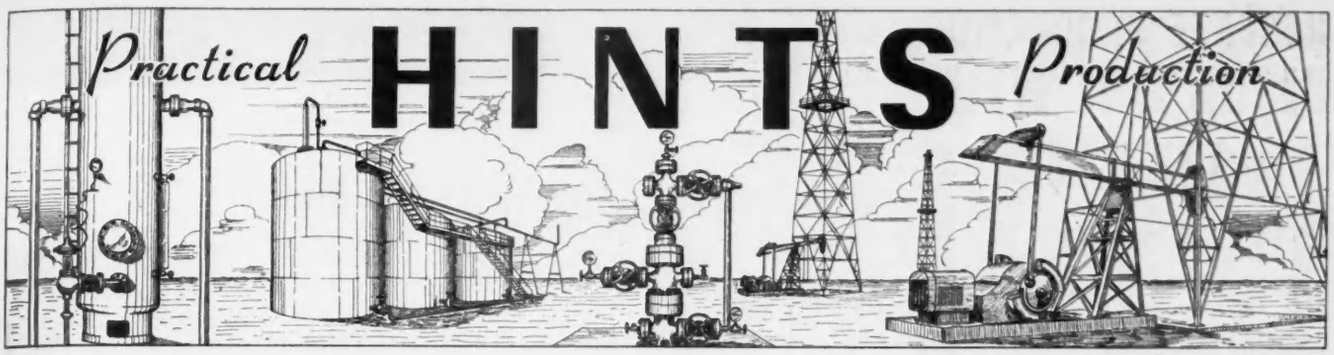
Production of oil from the fields of Northern Sakhalin is scheduled to be nearly trebled within the next few years, according to the USSR Information Bulletin.

New fields are to be put into operation this year in Eastern Ekhadi where 10 wells have already been drilled. The construction of a gas compressor and oxygen station and engineering works is being completed. Electric power lines for high-voltage transmission and an oil pipe line linking the field with the town of Akha are being laid.

Oil prospectors are also working on Kamchatka, where the first oil field will be worked in 1948.

Tropical Testing Wildcat

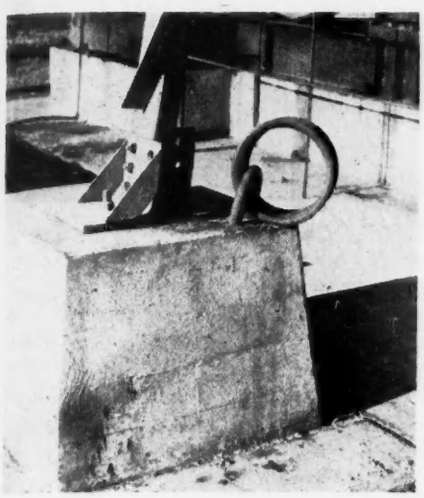
Reports from Colombia indicate confidence on the part of operators that the most northerly wildcat now drilling in the country will be completed as a producer. Tropical Oil Company and Socony-Vacuum Oil Company's Tubara 1, which has been drilled to 8155 feet where it had been fishing for stuck drill pipe for several weeks, is preparing to test, probably in formations above 5500 feet. Reports reaching this country say tanks are being built and connections being installed. Meanwhile rig is being set up for drilling the second well on the Tubara property, a lease obtained through private title.



$10.00 is paid for each illustrated acceptable contribution. Mail to The Editor, *WORLD OIL*, P. O. Box 2608, Houston 1, Texas

How To—

Install Heavy Casing Protectors as Efficient Tie-Downs



TIE-DOWNS

A wide anchor, with diameter sufficient to distribute stress over a full bight of either wire or manila line, is provided for his work-over crews by one operator. The usual loop or eye is cast into the corner foundation at the time the derrick is set up, with the addition of a heavy casing protector, which is threaded through the loop before it is set into the concrete. The protector is free to adjust with the pull, ample bearing surface against the loop being assured by the wide edges of the ring.

If a snatch block is used, the hook is passed around the protector, and the usual seizing applied across the point and shank to prevent unhooking. If the block used has clevis or eye instead of snap hook, connection is made by passing sand line or other flexible cable twice or more around the protector and through the eye, taking up all the slack and joining the free ends with two or more wire rope clamps.

The ring, unlike detachable equipment, is always on the job when needed, as it can be removed only with the aid of a hacksaw or the torch. When not in use, it may be laid flat back on the concrete pier.

How To—

Fabricate Folding Jack For Welding Trailer

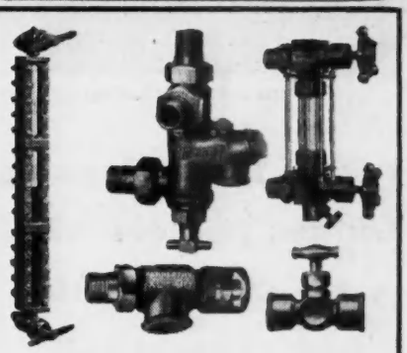
TRANS-PORTATION

Where a trailer is used to carry welding equipment, it is necessary many times to remove the motive power when the job is reached. Rather than carry blocking to place under the tongue of the trailer when the car or truck is removed, one welder fabricated a jack from scrap material to do this job.

The stem of a gate valve was used to make the shaft and an old piece of flat iron was bent and the outside of the threads of the gate valve brazed inside the top as shown. A short piece of channel iron was used to form the base which is turned down so that the shaft will turn inside the collar in the base.

Two bolt holes are matched between the side of the jack and the tongue of the trailer and a bolt inserted in one and a nut run up on it. The other hole is used to insert a pin to hold the jack in an upright position. Another hole in an angle iron which has been welded to the top of the tongue is used to hold the jack in a horizontal position when traveling over the road.

PENBERTHY
QUALITY
PRODUCTS



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All are of rugged construction and made by an organization with 57 years experience in the manufacture of quality products.

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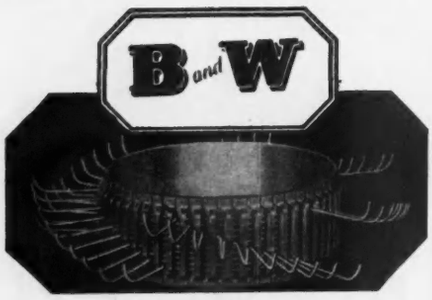

(Patented and Patents Pending)

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How To—

Minimize Rope Wear on Service Rigs

With manila cordage on the "hard-to-get" list, it is well to make extended efforts to conserve as much of this material as possible. Being one of the most consumable items used, manila rope receives much of its wear from being thrown around, and otherwise mistreated. To reduce undue wear of manila rope, one production superintendent designed the spool illustrated on which the rope may be stored when not in use. Not only does it provide an efficient arrangement for handling rope, but gives a neater appearance of the pulling unit on which the spool is mounted.

ROPE CARE

The unit consists of two steel plate flanges cut to 24-inch diameters and welded to the ends of a short section of scrap 7-inch or 5½-inch casing. A steel rod threaded on one is placed through the spool and welded to a short upright section of 1½-inch pipe which in turn is welded to a horizontal run of the same size pipe to form a support for the spool. The base of the support is a short 2½-inch nipple to which the support is welded, and which rides over a peg secured to the bed of the pulling unit. This construction permits the spool to be rotated about the base, placing the spool away from the truck bed when rope is paid out. It is shown in the secured or traveling position. A folding handle welded to the outside flange makes it possible to wind the rope on the spool without loss of time.

How To—

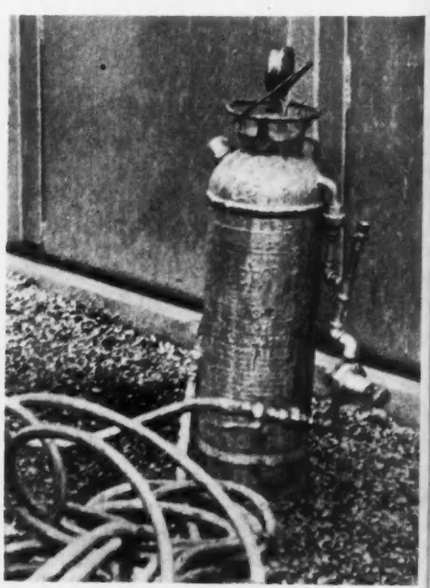
Improvise Paint Container for Spray Gun

The conventional container for paint to be used with a spray gun sometimes is heavier than desired for small jobs or painting on elevated structures such as columns or towers. To ease the job of painting in such instances, one maintenance foreman devised the light-weight paint container from salvaged material, as illustrated.

PAINTING

A standard foam-type, 15-pound, discarded fire extinguisher which had been in service beyond the time limit required by the underwriters was cleaned and repaired at all points showing signs of corrosion. It was then pressure-tested with water.

Connections were made on the side and above the shoulder of the air line attachments. The screw-top was drilled and threaded for the small standard pressure gauge. Strainers and other equipment found advisable were attached and the fittings provided with connections for the air and paint hoses. The weight of the completed can with a charge of paint is such that the painter can ascend ladders and scaffolding to the point where painting is to be done. The unit has provided trouble-free service and has a capacity that makes it a handy and desirable piece of equipment.



Patent Roundup

A Regular Feature of WORLD OIL

Patents recently issued by the United States Patent Office, Washington, D. C., include those listed below.

Printed copies of the patents listed are furnished by the Patent Office for 25 cents per copy and can be had by addressing the Commissioner of Patents, Washington 25, D. C.

Bottom Hole Regulator

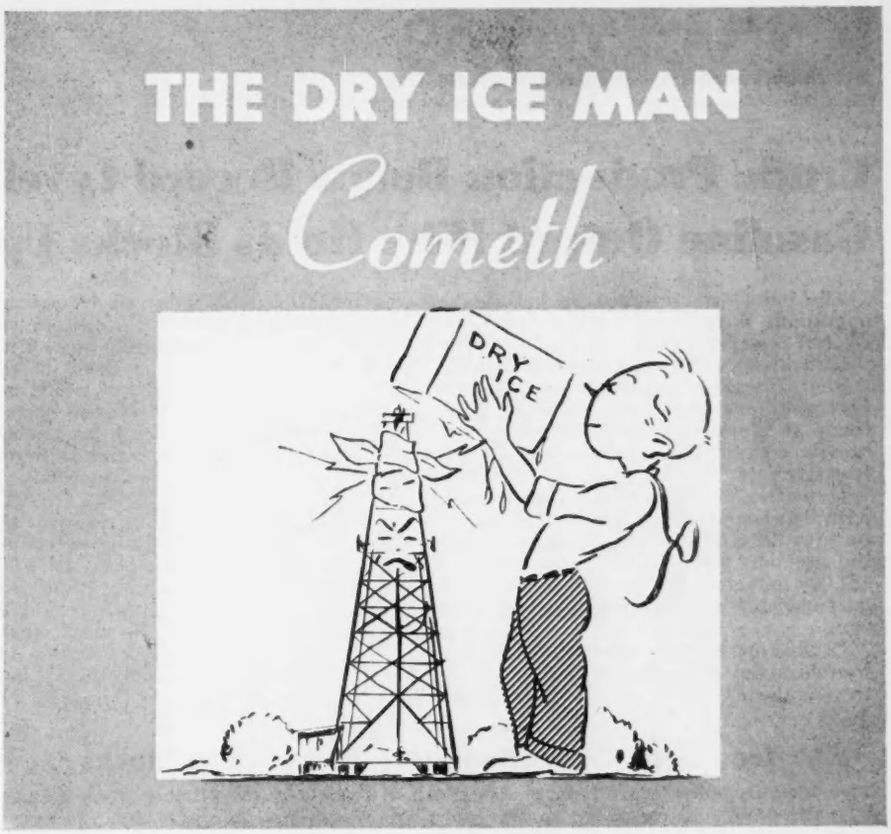
The patent (No. 2,411,667) for this regulator, which is adapted to be mounted in a string of flow tubing, is held by Lester D. Mowrey, Wichita Falls, Texas, and is unassigned.

A cage is connected to the upper end of a tubular body and has a means for detachable engagement with a supporting device adapted to lower the regulator into the tubing, where it is seated by a projecting ring resting on a supporting shoulder. Packing means surrounds the tubular body below the ring, closing the space between the body and the tubing. A valve seat is mounted in the tubular body, in which is also fixed a guide member at a point spaced downwardly from the seat. The guide member has circularly spaced openings through it. A valve stem is slidably mounted in the guide member, and a valve is mounted on the stem and positioned between the guide member and the seat in a position to engage the seat.

Means for Flowing Wells

This patent (No. 2,398,527) for an apparatus for flowing wells from formations having a large volume of gas was issued to William E. Halbert, Fort Worth.

A flow conductor extends axially through the well hole to a point below the natural liquid level of the well. The lower end of the conductor is closed against direct communication with the well but there is a means for admitting the well liquids to the conductor above its lower end. A means within the conductor, extending below the admitting means, causes the well liquids to flow downward within the conductor toward its lower end before flowing upwardly, therby providing a liquid seal for trapping the gas above the well liquids so that the pressure of the gas may be utilized to force the well liquids into the conductor without the gas being able to enter. A float-actuated means admits small quantities of the trapped gas to the flow conductor at spaced intervals to aerate and elevate the liquid column inside.



REMEMBER the man who killed a wild well with two bushels of golf balls?

The fellow who plugged a hole at 6500 feet in a string of tubing with a lead ball and a piece of shirt off a rougneck's back?

In case you've forgotten, his name is I. A. Miller, he is general superintendent for Otis Pressure Control, Inc., and he has recently added another "method" to his private operating manual.

Recently, a drilling crew near Baton Rouge was pulling pipe from an 8600-foot hole. Several stands had been racked when the well began to kick. Using the only equipment available, the crew stabbed a very low pressure valve on the top joint, which towered some 45 feet above the derrick floor. Then, after surveying this setup with due caution, they decided to find out just how much pressure they had by the tail. Plugging a gauge in on their improvised control head, they soon learned the awful truth. Twelve-hundred pounds per square inch against a low pressure valve!

At that point, the drilling superintendent decided that "enough was enough" and called Otis Pressure Control, at New Iberia, La. The call was then relayed to Otis' general offices in Dallas and several different methods of overcoming the emergency were discussed.

Enter, Miller. Yes, he had an idea that he had already done some experimenting on, just in case this sort of thing ever came up.

A short time later he, his assistant, L. M. Wilhoit, and C. A. Kizer, pilot of the company's airplane, were winging their way toward Baton Rouge. The only equipment carried was a large cardboard box. In the meantime a 24 x 12-inch piece of sheet steel had been rushed to the rig from New Iberia.

Arriving on location at 10 p.m., Miller took one look at the pressure gauge, opened the valve to make certain that mud was to the top of the drill pipe, and directed the crew to fashion a hollow container out of the sheet steel by wrapping it around the drill pipe at the rotary table. This done, he then opened his mysterious cardboard box and dumped 100 pounnds of dry ice into the metal container encircling the pipe. It was 10:25 p.m.

In the meantime a sample of the fluid had been taken and prepared for a similar treatment. Within 10 minutes the sample had frozen solid. Twenty minutes later the low pressure valve was removed and high pressure connections installed.

With the dry ice removed the job was completed. Total time: one hour.

Note: Although Miller has supervised hundreds of wireline and pressure tubing jobs under extreme conditions, he emphatically does not recommend the operation described above as a standard procedure, even under similar circumstances. This particular service was performed with professional forethought, use of data compiled from previous experiments, and serious consideration of all factors involved.

Crude Production Below Record Level; Gasoline Output Hike Holds Stocks Up

The industry continued its high-level operations during the week ended June 28, but lowered them slightly from the record highs of the past several weeks. A sharp increase in gasoline output had favorable effects on stocks and held them at about the same level as the previous week, according to the API's latest report.

Domestic crude production averaged 5,109,000 barrels daily during the week of June 28, a drop of 6000 barrels from the previous week's all-time record, but 152,000 barrels a day or 3.1 percent over output of the corresponding week a year ago.

Crude runs to stills were upped 15,000 barrels a day over the previous week's to average 5,093,000 barrels daily. That was 236,000 barrels a day or 4.9 percent more than daily runs of the like period of last year. Refinable crude stocks totaled 235,660,000 barrels on June 21, the latest report of the Bureau of Mines showed, having increased 758,000 barrels in the week ended that date. That amount was 13,467,000 barrels or 6.1 percent more than was in storage a year before.

An increase of 388,000 barrels over the previous week boosted gasoline output to 16,070,000 barrels, which was 1,450,000 barrels or 9.9 percent more than was produced in the comparable period of last year. At the end of the week stocks of finished and unfinished gasoline totaled 91,806,000 barrels, only 71,000 barrels less than a week ago. Those stocks were still 266,000 barrels less than were being held a year before.

Both light and heavy fuel oils were produced in smaller amounts than in the preceding week in order to step up the manufacture of gasoline. Despite these cut-backs, distillate stocks continued to build, but the heavier stocks showed some decline. Distillate fuel production amounted to 5,606,000 barrels, 336,000 barrels less than in the previous week, but 285,000 barrels more than last year's week. Stocks rose 886,000 barrels to total 41,721,000 barrels.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
High:												
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1945	4,944	7-21	5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1- 6
1946	4,961	6-15	4,968	12-28	229,430	3- 2	105,233	2-16	[1]67,286	11- 9	61,036	11- 2
1947	[1]5,115	6-21	[1]5,164	6-14	239,370	5-31	107,576	3-29	58,034	1- 4	53,285	1- 4
Lows:												
1945	3,621	10- 6	3,409	10- 6	[2]211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26
1946	4,403	3- 9	4,498	1-12	218,193	1- 5	85,324	9-28	25,131	3- 9	37,289	4- 6
1947	4,531	4-11	4,667	4-12	220,313	2- 8	91,806	6-28	31,470	4-19	42,668	4-26

TRENDS OF 1946 AND 1947

Trends in Week Ended	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1946									
January 5	4,548	4,651	218,193	14,488	98,494	5,923	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,337	28,240	8,738	37,746
April 27	4,672	4,685	224,443	14,228	99,631	5,568	30,466	9,204	39,404
May 25	4,759	4,857	222,214	14,312	95,769	5,463	32,973	8,908	43,368
June 29	4,957	4,854	223,883	14,500	92,333	5,325	37,762	8,828	46,477
July 27	4,926	4,896	223,756	14,535	88,626	5,817	44,316	8,217	49,517
August 31	4,833	4,911	227,132	15,014	87,217	5,630	53,134	8,539	53,173
September 28	4,778	4,829	223,043	14,675	85,324	5,632	59,827	8,172	57,657
October 26	4,730	4,758	221,184	14,863	86,423	5,710	65,499	7,728	60,872
November 30	4,795	4,707	227,693	15,145	88,371	5,258	66,062	7,672	58,647
December 28	4,713	4,968	225,995	15,604	93,126	5,931	58,941	8,181	53,427
1947:									
January 4	4,649	4,917	223,291	15,281	94,882	5,857	58,034	8,375	53,285
January 25	4,672	4,820	221,655	14,624	99,801	5,630	50,357	8,224	48,558
February 22	4,786	4,860	224,580	14,668	103,904	5,929	40,739	8,542	44,919
March 29	4,865	4,843	227,529	14,396	107,576	5,969	32,737	8,668	43,364
April 26	4,930	4,725	235,383	14,213	103,860	5,435	32,286	8,186	42,668
May 31	5,024	5,000	239,370	14,709	95,876	5,732	36,032	8,910	45,224
June 7	5,064	5,148	234,849	15,350	94,802	5,286	37,173	9,032	46,779
June 14	5,113	[1]5,164	234,902	15,695	93,356	5,981	38,285	8,960	47,812
June 21	[1]5,115	5,078	235,660	15,682	91,877	5,942	40,835	8,598	48,766
June 28, 1947	**5,109**	**5,093**	.....	**16,070**	**91,806**	**5,606**	**41,721**	**8,298**	**48,490**
June 29, 1946	4,957	4,857	[3]222,193	14,620	92,072	5,321	38,343	8,537	46,028
Change:									
In Week	—6	+15	+758	+388	—71	—336	+886	—300	—276
In Year	+152	+236	+13,467	+1,450	—266	+285	+3,378	—239	+2,462
In Year	+3.1%	+4.9%	+6.1%	+9.9%	—0.3%	+5.4%	+8.8%	—2.8%	+5.3%

[1] All time peak. [2] Lowest since December, 1921. [3] Stocks, June 22, 1946.

Some Penn-Grade Crudes at New 18-Year Price Level

Advances of 15 to 25 cents per barrel boosting prices for some Pennsylvania-grade crudes to the highest points in 18 years were announced. Bradford and Alleghany oils are now priced at $4.30 a barrel as compared with $4.35 in 1929.

On July 1, and becoming effective the same date, the Joesph Seep Purchasing Agency of South Penn Oil Company announced its postings increased by 25 cents to $4.30 per barrel for Bradford and Allegany crudes. This increase was quickly met by Valvoline Pipe Lines and Tide Water Associated Oil Company, while Pennzoil Company extended the same hike to the lower districts in which it purchases.

The Waverly Oil Works Company, a day later, became the first to announce a 15-cent per barrel raise for Pennsylvania crude produced in southwestern Pennsylvania, West Virginia and Ohio. Its new postings are $3.99 a barrel for southwestern Pennsylvania and Eureka (W. Va.) grades, $3.95 and $3.65 a barrel for Buckeye (Ohio) and Zanesville (Ohio) grades respectively.

Today's price of $4.30 per barrel for Bradford and Allegany crude compares with price of $4.35 in 1929 and $4.50 per barrel in 1924, when post-World War I demand for Pennsylvania lube oils paralleled present heavy demand.

Standard Oil Company of California's crude price increase of 20 cents a barrel across the board has been met by General Petroleum Corporation. Effective date of the new prices was July 1.

Union Oil Company, the first California major to revise its schedule, advanced prices 7 to 30 cents a barrel on June 25, but later changed schedule for heavy crudes to the same level as Standard's straight 20 cents. Union still tops Standard on the higher gravities.

All three companies advanced heavy fuel oil prices by different amounts. Union's raise was 35 cents a barrel, Standard's 20 cents, and General Petroleum's 30 cents. Early in the week other major sellers of heavy fuel had made no price changes. There has been no revision in gasoline prices by any company, although prices on sales within California advanced 1½ cents on July 1, due to an increase of that amount in state gasoline tax.

Gulf Oil Corporation announced a tank wagon price advance of ½ cent a gallon for all grades of gasoline at all Texas points east of the Pecos River, to be effective July 3.

• Oklahoma

Pool Opened in Old Dry-Hole Area of Seminole County

New oil pool opened in old dry-hole area; new production seen at Noble County wildcat; Sohio to plug off second producing zone at Eola; old wildcat revived as a good producer; East Lindsay pool extended into McClain County; deep wildcat staked on east edge of Anadarko Basin.

Seminole County: New production has been opened in the Cromwell sand near Wewoka, in an area spotted with dry holes. Deardorf Oil Corporation's Aldridge 1, NW NE NW 22-8n-8e, was indicated good for 200 barrels of oil per day from the Cromwell at 3196-98 feet. Pipe has been set on top of the pay. Total depth is 3201 feet, and testing is continuing. Deardorf was moving in to wash down an old hole, the Chamblee 1, NW SE SE 15-8n-8e, which was drilled to dry Wilcox sand at about 4300 feet 2 years ago.

Noble County: Bartlesville sand production has been opened at Davon Oil Company's Tautfast 1, NE SW NW 32-24n-1e, wildcat 4 miles northwest of the Red Rock pool. The well filled up with 1500 feet of 44-gravity oil from the Bartlesville at 4305-70 feet. Production tests will begin as soon as the well is cleaned. C. L. Teale, Tulsa independent operator, is planning a well ½ mile west at the Port 1, SW NW NE 31-24n-1e.

Garvin County: Sohio Petroleum Company was to set a plug between the upper and lower McLish oil zones to shut off the lower sand horizon at Howard 1, SE SE NW 17-1n-2w, in the southern part of the county. Discovery well of the Eola pool, the Howard 1, which came in for 1200 barrels daily early in the year, flowed an average of 28 barrels of oil an hour through chokes from the lower McLish sand at 10,550-818 feet, total depth. The test originally was completed in the McLish dolomite zone at 10,202-34 feet. Under a Corporation Commission order the well produced at a rate not to exceed 500 barrels daily for 60 days, during which time engineering tests were made. It was then given a 400-barrel daily allowable and prior to deepening, it had yielded about 50,000 barrels of oil.

O. L. Ledgerwood has a 63-barrel producer at Hope 1, NE NW SE 33-4n-2w, an old abandoned hole. The hole has been plugged back to 6260 feet and casing set at 6240 feet. Production is from the Pennsylvanian sand, with old total depth 7000 feet.

The East Lindsay pool has been extended north into McClain County by Sinclair Prairie Oil Company's McDaniel 1, CSE SE 35-5n-4w. The well proved its second producing zone on a 35-minute drill-stem test at 10,174-202 feet, showing gas in 4 minutes and oil in 9. Oil flowed at the rate of 20 barrels per hour and gas was gauged at 7,895,000 cubic feet daily. The well made 12 barrels of 47.8-gravity oil per hour and 3½ million cubic feet of gas on a previous drill-stem test at 10,100-74 feet.

McClain County: Another deep wildcat has been staked on the eastern edge of the Anadarko Basin. Universal Consolidated Oil Corporation's Moore 1, CNE NE 20-7n-4w, is about 12 miles north of the North Lindsay pool, and some geologists believe the test is on a west-outlying feature of the general Grady - McClain district. Viersen and Cochran, Okmulgee contractors, have been given contract for the deep test.

• Kansas

McPherson County Test Has Light Shows in Two Zones

McPherson County wildcat drills ahead after getting faint shows in Viola lime; testing continues at Hansen pool well; Ash Creek pool well pumps 167 barrels in 8 hours; Ames pool test put on pump.

McPherson County: Drilling has been resumed at Phillips Petroleum Company's Holcomb 1, SE NE SW 28-17s-1w, a mile south of the Henne pool, following testing of the Viola lime. A drill-stem test at 3133-39 feet, with tool open 45 minutes, recovered gas and light oil stain. Light stainings were also encountered in the Mississippi lime at 2668-78 feet, as was a small amount of gas.

Phillips County: Testing continues at Cities Service Oil Company's Brown 3-B, NW NW SW 23-5s-20w, in the Hansen pool. The well pumped 213 barrels of oil, with no water, in 24 hours from the Lansing lime. Pay came through perforations at 3243-339 feet.

Barton County: Phillips is testing for completion at Houdyshell 1, SW NW SE 31-20s-15w, in the Ash Creek pool. The well pumped 167 barrels of oil, with 61 barrels of water on an 8-hour pump test from the Arbuckle lime at 3830-45 feet. Pumping came following acidizing. Arbuckle was topped at 3783 feet, and a drill-stem test at 3834-46 feet with tool open 16 minutes, recovered gas and 720 feet of oil.

R. L. Williams has put Drews 3-B, Ames pool, on pump following swabbing of 30 barrels of oil and 42 barrels of water in 3 hours in the Lansing lime. Pay is from 3118-22 feet. The formation was topped at 3049 feet, with a show of oil encountered at 3119-25 feet. Total depth is 3355 feet, 6 feet into the Arbuckle.

Exposition Executive Named

To meet expanded needs of the International Petroleum Exposition to be held May 15-22, 1948, in Tulsa, E. F. Bullard, president and director of Stanolind Oil & Gas Company, has been elected a member of the executive board of the Exposition and Congress.

Wells Completed in the United States in Week Ended June 28, 1947

Data preliminary and subject to revision. Revised and more complete data on all completions and exploration shown in monthly summaries published in last issue of each month.

State or District	FIELD COMPLETIONS: New Wells: Oil	Dist.	Gas	*Input	Dry	Total	Old Wells Deepened	EXPLORATORY COMPLETIONS: Oil	Dist	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	This Week 1946
Arkansas	....	....	....	....	1	1	....	1	....	....	....	1	2	8	7
California	25	....	3	....	....	28	1	....	....	....	5	5	34	37	40
Colorado	1	....	....	....	....	1	....	....	....	....	4	4	5	3	1
Florida	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1
Illinois	15	....	....	....	6	21	....	3	....	....	6	9	30	34	57
Indiana	5	....	....	....	3	8	....	....	....	....	2	2	10	9	8
Kansas	25	....	6	1	7	39	1	....	....	....	6	6	46	43	32
Kentucky	4	....	2	....	1	7	....	....	....	....	1	1	8	9	9
Louisiana	14	2	2	1	9	28	....	....	....	1	7	8	36	29	19
N. Louisiana	8	2	2	1	6	19	....	....	....	1	7	8	27	23	13
S. Louisiana	6	....	....	....	3	9	....	....	....	....	....	....	9	6	6
Michigan	10	....	....	....	2	12	....	....	....	....	2	2	14	13	15
Mississippi	7	....	....	....	3	10	....	....	....	....	....	....	10	11	4
Montana	6	....	....	....	3	9	....	....	....	....	....	....	9	5	4
New Mexico	7	....	1	....	....	8	2	....	....	....	....	....	10	13	7
New York	14	....	1	16	....	31	....	....	....	....	....	....	31	30	25
Ohio	4	....	9	....	7	20	....	....	....	....	....	....	20	30	38
Oklahoma	56	....	4	....	20	80	4	....	....	....	8	8	92	84	75
Pennsylvania	20	....	13	22	6	61	....	....	....	....	....	....	61	60	52
Texas	110	1	6	....	29	146	4	7	1	3	34	45	195	168	152
DISTRICTS:															
1—S. Central	1	....	....	....	2	3	....	....	....	....	1	1	4	6	4
2—Middle Gulf	6	....	2	....	1	9	....	1	....	2	6	9	18	8	[1]
3—Upper Gulf	4	1	....	....	3	8	....	1	1	....	2	4	12	9	8
4—L. Gulf-S.W.	11	....	....	....	2	13	....	1	....	1	4	6	19	17	29
5—E. Central	3	....	....	....	....	3	....	....	....	....	2	2	5	2	[2]
6—Northeast	8	....	3	....	1	12	....	1	....	....	....	1	13	10	8
7-B—N. Central	6	....	1	....	4	11	....	1	....	....	5	6	17	23	[3]
7-C—W. Central	6	....	....	....	1	7	1	1	....	....	2	3	11	9	[4]
8—West	44	....	....	....	1	45	1	....	....	....	3	3	49	33	40
9—North	17	....	....	....	14	31	1	1	....	....	6	7	39	40	61
10—Panhandle	4	....	....	....	....	4	1	....	....	....	3	3	8	11	2
West Virginia	1	....	17	....	....	18	....	....	....	....	....	....	18	17	18
Wyoming	1	....	....	....	....	1	....	....	....	....	....	....	1	1	5
Total U.S.	325	3	64	40	97	529	12	11	1	4	75	91	632	606	569

* Includes salt water disposal wells. [1] Middle Gulf included with Lower Gulf-S.W. [2] East Central included with Northeast. [3] North Central included with North. [4] West Central included with West.

• New Mexico

Leo-Turkey Track Section Test Shows for Discovery

Eddy County wildcat shows for oil discovery; Kutz Canyon deep-pay discovery drilling by tools.

Eddy County: Harvey E. Yates et al's State 1, C SE SW 32-18s-30e, wildcat between Leo and Turkey Track pools, bailed 23 barrels of oil on 8-hour test of open hole at 3447-595 feet. A nitro shot was given the most effective pay-zone at 3561-85 feet, and clean-out operations were under way.

San Juan County: Byrd & Frost, Inc., et al's Hargrove-Federal 1, Kutz Canyon deep prospect, was drilling by tools lodged while cleaning out after nitro shot at 6560-70 feet. Pressure control equipment was installed while drilling by due to high-pressure gas from the Dakota. This test made an unsuccessful test of the Morrison, topped at 6727 feet, with water at 6745 feet.

Carroll and Cornell's Cornell-Federal 9, SW NW SW 12-29n-12w, Fulcher Basin deep test, entered the Point Lookout at 4261 feet, and was fishing at 4293 feet.

Erle P. Halliburton Named Board Chairman of Company

Erle P. Halliburton, founder of Halliburton Oil Well Cementing Company and president of the firm since its incorporation in 1924, was elected chairman of the board at the annual meeting of stockholders here July 1. Replacing him as president of the oil well servicing company is John C. Halliburton, who has served as vice president for 13 years.

A veteran of 27 years service as the head of varied enterprises, the board chairman expressed a desire to turn over the details and responsibilities of active management to his junior officers. The organization which he founded in 1919 with a horse-and-wagon cementing outfit now operates in six foreign countries and employes over 3200 persons in oil-producing areas throughout the U. S. Other officers are W. R. McClendon, reelected vice president; L. D. Campbell, newly elected vice president who will also continue as secretary-treasurer; and Hugh H. Leonard, reelected assistant secretary-treasurer.

Directors for the ensuing year are Erle P. Halliburton, Duncan and Los Angeles; John C. Halliburton, Duncan; W. R. McClendon, Duncan; David Frame, Houston; E. R. Filley, Houston; Joe H. Russell, Houston; A. E. Chester, Dallas; L. A. Sunkel, Dallas; and R. B. Kelly, Fort Worth.

• West Texas

Crane County Wildcat Has Nominal Show in Ellenburger

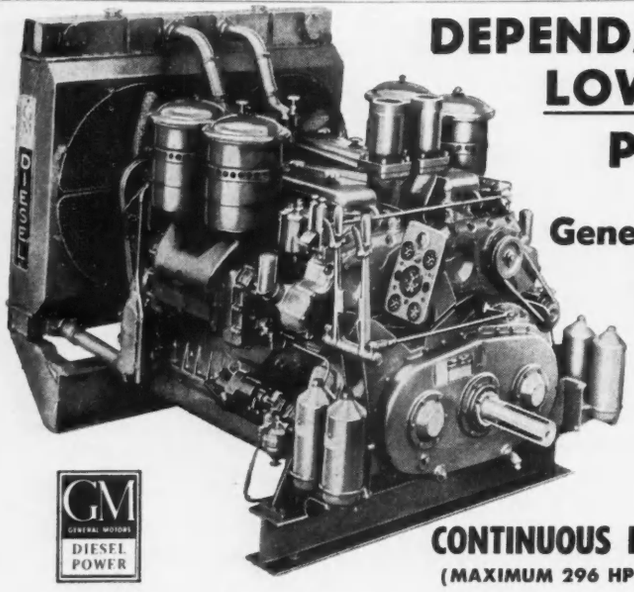
Crane County wildcat has nominal oil show in top of Ellenburger; Sand Hills structure has new shallow area; Keystone field registers seventh oil horizon; Adair field extended into Gaines County.

Crane County: The Texas Company's Connell 31, C NW SW PSL 29, Block B-16, and 3 miles west of the Ellenburger-pay discovery for the Jordan field, was drilling dolomite at 9880 feet after testing a small amount of oil-cut mud without water at 9786-816 and 9788-846 feet. The Waddell zone of the Simpson was called at 9515 feet, with elevation 2853 feet. The company's Alan Connell 1, situated 2 miles south, was drilling dry lime at 7420 feet, having entered the Glorietta at 4500 feet, or 64 feet low.

Gulf Oil Corporation's Waddell et al 11-T, SE SE SE PSL 20, Block B-21, originally completed in 1939 as an outpost producer for the Tubb (Clear Fork) zone of the Sand Hills field at 4680 feet, blew out while swedging collapsed pipe near the 3500-foot level and opposite the McKnight pay. The well flowed 180 barrels of oil, with gas-oil ratio 1314/1 on 15-hour test before gas broke in. Last gauge listed 20 barrels of oil daily, with gas-oil ratio 12,290/1. This outpost is 1¾ miles south by east of nearest McKnight production.

Winkler County: Richardson & Bass, Inc.'s Walton 44-H, SW SW PSL 1, Block B-3, southwest edge of the Keystone-Ellenburger area, and a failure in the 4700-foot Holt (Glorietta) lime, confirmed the Clear Fork for production in flowing 448 barrels of oil and 19 barrels of water daily through 5/8-inch choke after using 1000 gallons of acid. The well later tested 18 barrels of oil hourly without water on extended test through ¼-inch choke after reacidizing. Production is from open hole at 5009-50 feet, having plugged back from 5110 feet. Other wells have indicated commercial production from this zone, which is the seventh for the structure, but the Clear Fork was passed up.

Ector County: Humble Oil & Refin-



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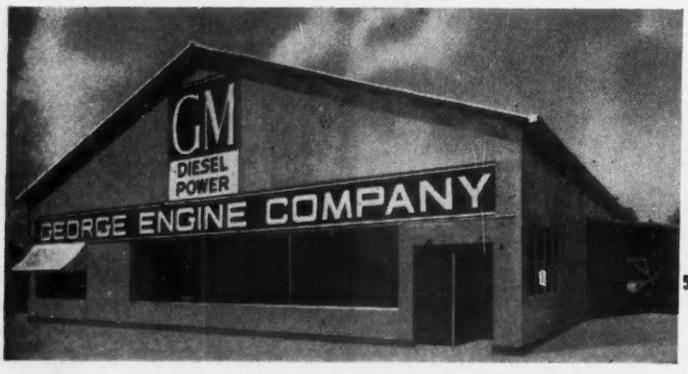

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DESCRIPTION AND PACKAGING

M-1 Chain Demolition Blocks consist of eight tetrytol blocks each measuring 2 x 2 x 11 inches and weighing 2½ lbs. The blocks have a tetryl booster pellet in each end and are cast onto a single length of detonating cord. Each block is enclosed in asphalt impregnated paper and the chain is packed in a cloth haversack equipped with carrying strap. Two chains are packed to a wooden box.

M-2 Demolition Blocks are individual blocks identical with M-1 but they have a booster pellet and threaded cap well in each end. The M-2 blocks are packed the same as the M-1.

M-3 Demolition Blocks are 2¼ lb. blocks of moldable plastic explosive of composition C-2 or C-3. Each block is wrapped in glazed paper and inclosed in a cardboard carton. Eight blocks are packed in a cloth haversack; two haversacks in a wooden box.

M-4 Demolition Blocks are ½ lb. blocks of the same composition as the M-3. These are packed 100 to a wooden box.

Prices, F. O. B. location, are as follows:

M-1—75 cents per chain of eight blocks (2½ lbs. each)
M-2—10 cents each per 2½ lb. block
M-3—10 cents each per 2¼ lb. block
M-4—3 cents each per ½ lb. block
Minimum Quantities—1,500 lbs.

This material is available for immediate sale and delivery to all classes of purchasers at the following War Assets Administration Regional Offices in the approximate quantities. Offers to purchase may be made at any WAA Customer Service Center or by letter, wire or personal visit to any of the Regional Offices listed. If your offer is written, mark your envelope "Offer to Purchase Demolition Blocks, A-127".

WAA OFFICE	M-1	M-2	M-3	M-4
Birmingham	525,031 lbs.	430,922 lbs.	—	—
Chicago	716,720 lbs.	44,707 lbs.	—	—
Cincinnati	492,520 lbs.	1,056,250 lbs.	50,965 lbs.	—
Denver	2,731,130 lbs.	143,720 lbs.	643,964 lbs.	—
Grand Prairie	116,560 lbs.	45,772 lbs.	376,679 lbs.	—
Los Angeles	1,682,580 lbs.	870,500 lbs.	474,480 lbs.	—
Minneapolis	1,111,960 lbs.	1,664,320 lbs.	—	—
Nashville	194,440 lbs.	1,189,640 lbs.	804,093 lbs.	—
New York	202,165 lbs.	164,945 lbs.	610,636 lbs.	1,327 lbs.
Omaha	1,335,110 lbs.	278,930 lbs.	316,946 lbs.	—
Philadelphia	352,225 lbs.	384,845 lbs.	—	1,896 lbs.
Portland	592,260 lbs.	877,880 lbs.	—	—
Salt Lake City	676,105 lbs.	1,843,563 lbs.	4,576 lbs.	946 lbs.
San Francisco	3,220 lbs.	17,860 lbs.	27,648 lbs.	—
St. Louis	102,172 lbs.	—	—	—
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1276

ing Company's Cowden 1-H, southeast edge of the Andector 12-well field, flowed 1625 barrels of 42.9-gravity initial through ½-inch choke after acidizing Ellenburger perforations at 8460-545 feet. The favorable structural position of this outpost indicates production will prevail at the other 3 locations afforded by the tract, which was acquired early this year for a cash bonus of $750 per acre, and an additional $3000 per acre payable from production.

Plymouth Oil Company's Cowden 3-A-12, twin well to an Ellenburger producer recorded the first Clear Fork producer for the Andector field in flowing 168 barrels of 39-gravity oil, with gas-oil ratio 890/1, on official gauge through ¼-inch choke after acidizing open hole at 6200-80 feet.

Cities Service Oil Company and Sinclair Prairie Oil Company's Wooten 1, wildcat in the southwest corner of the county and 1½ miles northeast of a prospective Devonian producer, filled 5000 feet with fluid, including 3000 feet of oil, from open hole in Strawn at 8065-105 feet, having plugged back from dry Devonion at 8335 feet. It may make a marginal pumper. Humble's Yarbrough-Allen 1, indicated oil discovery in the Devonian, was drilling at 9030 feet, with the Fusselman, or productive section of the Silurian due within 300 feet.

Gulf Oil Corporation and Kewanee Oil Company's University 1-A, ¾ mile southeast of the Ellenburger-pay discovery for the Jordan field, was drilling at 8243 feet, having entered the Silurian at 7970 feet, or 237 feet low. Gulf's Goldsmith 430-E, ⅝ mile northwest of its Devonian-pay discovery for the Goldsmith field and a prolific flowing well from the Devonian prior to reaching formation water, was running tester at 8442 feet in the top part of the Silurian.

Gaines County: Amerada's Yeager 1, NW NW NW PSL 16, Block C-31, ½-mile southeast outpost for the Adair field, entered broken pay at 4816 feet, and main pay at 4856 feet, and was due to set pipe on bottom near the 4907-foot level to complete through perforations. The San Andres was topped at 4430 feet, and the pay is 29 feet low to the discovery.

Crockett County: Plymouth's Owens 1-O-A, east offset to Crinoidal discovery by Cities Service et al in the Owens-Hobbs area and structurally low, failed in its initial attempt to acidize without setting pipe in Crinoidal at 5722-84 feet. Drill-stem tests of this section yielded oil- and gas-cut mud, but were rated as doubtful for commercial production. Cities Service's Hobbs 1, west offset to the discovery and also structurally low, indicated production in using tester at 5705-30 feet and 5730-68 feet, but reached water in the latter. A big structure is involved, and attractive production from the Pennsylvanian and Ordovician is possible, although the discovery failed in the Ellenburger.

Amerada's University 1-CTA, wildcat that drilled through the Ellenburger zone at 8102-9080 feet, swabbed 20 barrels of oil and 80 barrels of water daily in making its best showing from multiple Ellenburger perforations, and is making final test at 8102-20 feet. More development is certain for this geophysical prospect.

Andrews County: The Pure Oil Company et al's Cowden 1, 15/16-mile outpost for the Dollar Hide field and capable of flowing production from the Devonian, entered the Silurian at 8210 feet, with elevation 3169 feet, and was drilling at 8486 feet, being 111 feet below the total depth of the field's single Silurian producer.

• North Texas

Discovery in Clay County Yields Oil Flow After Acid

Clay County discovery responds to acid with oil flow; second big producer assured for Throckmorton County field; gas area in Young County yields oil from conglomerate; Baylor County lists first deep lime producer.

Clay County: Phillips Petroleum Company's Bryant Edwards 1, B. Redding Survey 45 and 1¾ miles southwest of the Bryant Edwards 5-well field, flowed 147 barrels of 44-gravity oil, with gas-oil ratio 1115/1, on 6¼-hour gauge through chokes varying from ¼ inch to 28/64 inch after acidizing perforations at 6118-38 feet. Production is from conglomerate in Bend, topped at 5913 feet with elevation 907 feet. The well proved dry in Ellenburger at 6415-49 feet, and was plugged back to 6261 feet.

Throckmorton County: Jas. H. Snowden et al's Bailes-Parmenter-Jones Unit 2, near NE NW NE BBB&C Ry. 296, and 933 feet northeast of a recent prolific discovery, set pipe to complete after developing steady oil flow when tester was used at 4203-19 feet. The Bend was entered at 4203 feet, or 25 feet high. Owners are starting their third test on the unit 1200 feet east by north, and plan continuous development.

West Central Drilling Company-Ernest L. Wilson et al's Putman 1, McKinney-Williams Survey and 2 miles from oil production, proved a new shallow area in pumping 32 barrels of 36-gravity oil initial from Tannehill sand at 670-90 feet. Gauge of the discovery was delayed, and owners have since completed 4 wills, including a gasser, and propose to apply secondary recovery operations at an early date.

Baylor County: Ashland Oil & Refining Company's Martin 1, SW SE Sect. 3114, TE&L Co. Survey, and first deep lime discovery for the county, pumped 62 barrels of oil and 200 barrels of water after extended tests and acid treatment of Mississippian perforations at 5410-25 feet. An offset is under way.

Wilbarger County: Amerada Petroleum Corporation's Dodson 6-B, south by west offset to the Ellenburger-pay discovery for the Fargo field, was fishing at 6345 feet. The Ellenburger was entered at 6273 feet, or 25 feet low, and drill-stem tests at short intervals yielded a negligible volume of oil with rotary fluid, but acid is expected to make a commercial well.

Grayson County: Standard Oil Company of Texas is starting J. C. Bates 1, J. B. McNair Survey, and 1¼ miles northeast of the deepest of its 2 tests on its Sherman geophysical prospect, and will explore the Ellenburger. The company spent about $175,000 for its 20,000-acre block, and drilled an 11,541-foot Ellenburger failure.

Young County: Warren Oil Corpora-

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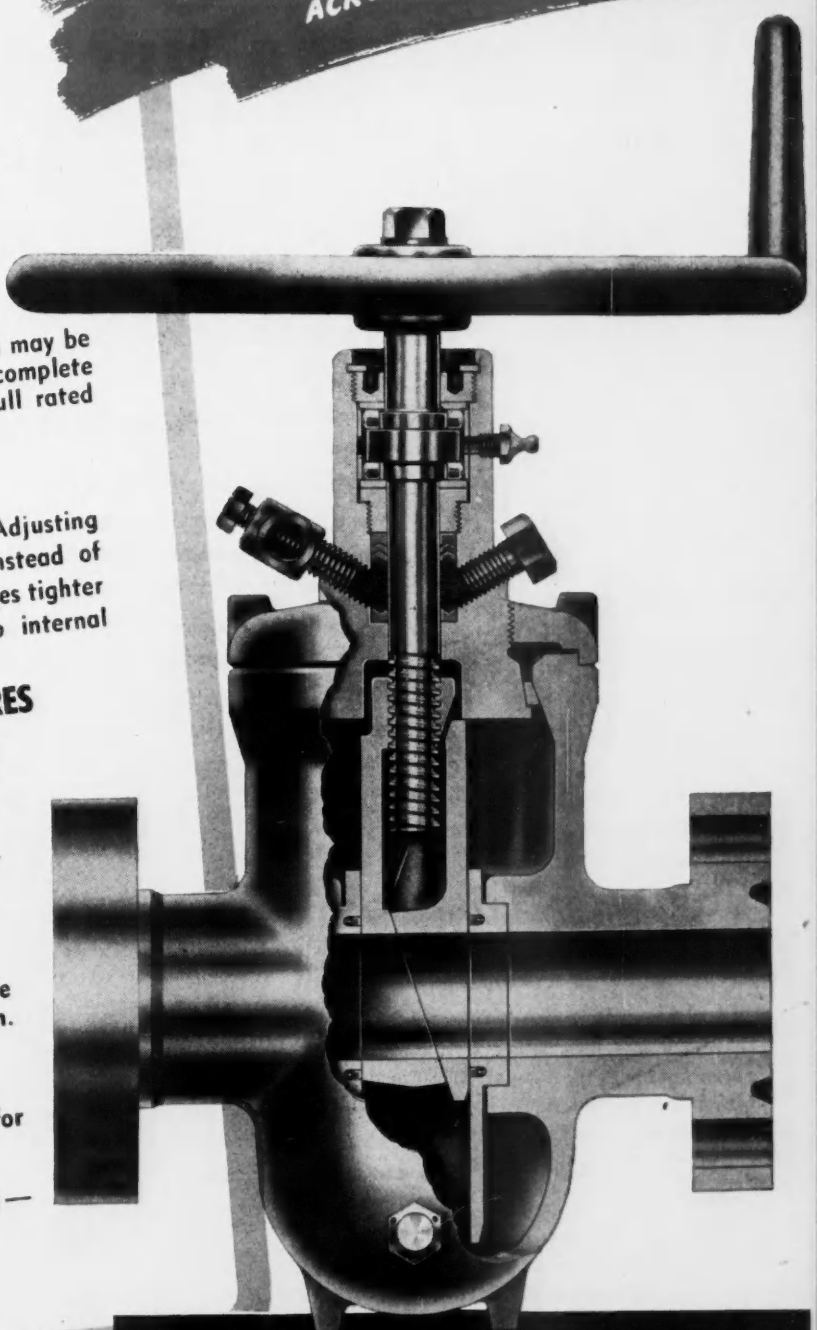

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tion's Martin 2, M. DeWitt Survey, A-1412, and south by east offset to a recent gas discovery from the same zone, flowed 437 barrels of 43-gravity oil, with gas-oil ratio 700/1, on natural potential through ¼-inch choke from open hole at 4220-35 feet. It is producing from conglomerate beds of the Bend, topped at 3492 feet.

Monsanto Lets Contracts

Contracts for the reconstruction of part of the Monsanto Chemical Company plant which was destroyed in the Texas City disaster have been let to the W. S. Bellows Company of Houston and the Leonard Construction Company of Chicago. J. R. Mares, general manager of Monsanto's Texas Division, said the initial contracts would total more than $6 million and that a minimum of 1500 men would be employed.

• East Texas

Yantis Area Prospect Dry in Upper Travis Peak Section

Yantis prospect is dry in Upper Travis Peak; Quitman field's deep test is disappointing in the Rodessa; Tri-Cities field contributes oil flow from the Rodessa; Cotton Valley wildcat assigned Freestone area.

Wood County: Humble Oil & Refining Company's Rio Oil Corporation 1, Yantis prospect and probable gas-distillate producer from the 7700-foot Rodessa, entered the Travis Peak at 8275 feet, and failed to indicate production in drilling at 8330 feet.

Shell Oil Company's Goldsmith 12, Quitman field deep test that logged the Cotton Valley-salt contact at 11,158 feet, failed to make a commercial gas-distillate producer from Rodessa perforations at 7833-59 feet, and will perforate higher.

Henderson County: M. B. Chastain et al's Baker 1, northwest corner of 75-acre lease, J. M. Y'Barbo Survey, emphasized the possibilities of oil production from the Rodessa in the Tri-Cities gas-distillate field in flowing 35 barrels of 47-gravity oil hourly through testing tool from perforations at 7671-91 feet. The well later flowed 11 barrels of oil hourly through ¼-inch choke, with 550 pounds back pressure on tubing. It is due to be plugged back to the 7500-foot Bacon as a gas-distillate well as a market is available for the gas and the rich condensate outpost is exempt from proration. The British American Oil Producing Company's Young 1, Jos. Rice Survey, discovered the field in 1941 as a high-gravity oil well, and continues to flow from 80 to 90 barrels daily as the only official oil well.

Freestone County: Humble Oil & Refining Company is starting McWatters 1, southwest corner of the G. W. Lamb Survey A-402, and 1½ miles south of Freestone, and will explore the Cotton Valley. The company has a large supporting block.

Kaufman County: Humble's Guy 1, Kemp prospect, was taking sidewall cores before plugging at 9800 feet in Smackover, topped at 9477 feet. No shows were recorded.

Van Zandt County: Humble's McCord 1, Leander Smith Survey and a Travis Peak prospect, was running drill-stem test at 7868 feet with water indicated in the Rodessa. The massive anhydrite was entered at 7525 feet, with elevation of 540 feet.

Harrison County: Byrd Oil Company's Mrs. Cleve B. Jobe 1, Sarah Reynolds Survey, west outpost to Travis Peak oil production on the west flank of the Waskom field, is flowing 125 to 150 million cubic feet of gas daily from the Pettit lime, perforated at 5678-98 feet with 120 shots. Recovery was over a 24-hour testing period, with ungauged amount of distillate flowing into two 500-barrel tanks.

Humble Production Department Personnel Changes Announced

Ten changes in Humble Oil & Refining Company's Production Department supervisory forces were announced.

Jack S. Toler, London District civil engineer, Overton, Texas, has been transferred to the Louisiana division office, New Orleans, as assistant division civil engineer to handle offshore drilling.

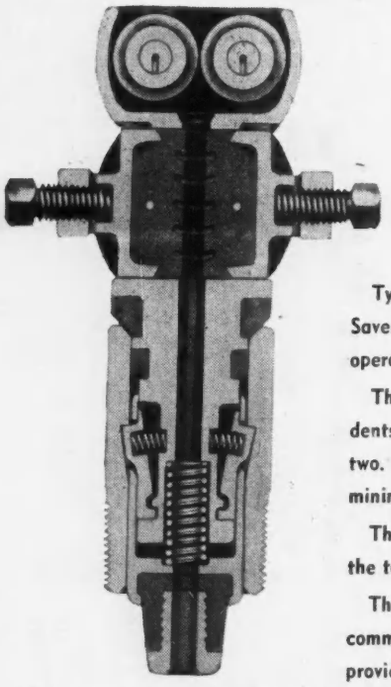
William A. Schaefer, civil engineer in the North Texas division office, replaces Toler as district civil engineer at the London district, Overton.

L. W. Cheaney, assistant district chief clerk in the Hub district, Columbia, Miss., was transferred to the Eucutta district, Waynesboro, Miss., as district chief clerk.

J. F. Richie, assistant district chief clerk at Avery Island district, New Iberia, La., has been transferred to the Hub district in Columbia, replacing Cheaney.

E. B. Woodell, superintendent of the

For Swabbing Operations



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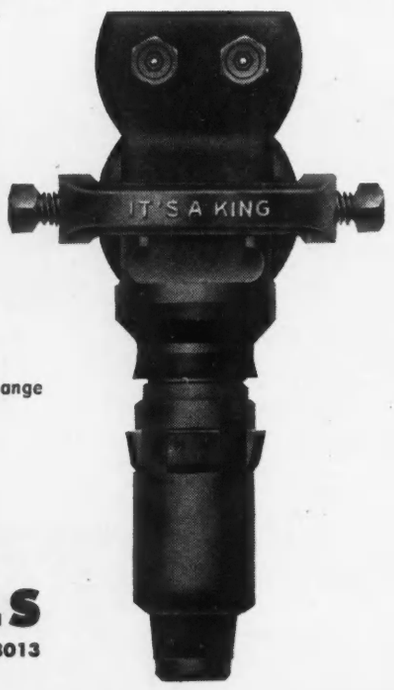

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Lovell Lake Pressure Maintenance plant, has been placed in charge of the Anahuac Gas Plant, Monroe City, Texas.

M. U. Bateman, district chief clerk at Heyser Gasoline Plant, Bloomington, Texas, has been transferred to the Anahuac Gas Plant, Monroe City, as district chief clerk.

Joe M. Barber, chief clerk of the Eucutta district, Waynesboro, Miss., has been transferred to the Heyser Gasoline Plant, Bloomington, as district chief clerk.

J. A. Sweeney has been transferred from the Anahuac Casinghead Gasoline Plant-Construction, Monroe City, Texas, to the McCamey, district, McCamey, Texas, as assistant district chief clerk.

H. D. Bradberry, assistant district chief clerk in the Wasson district, Denver City, Texas, has been transferred to Avery Island district, New Iberia, as assistant district chief clerk.

E. S. Davis, division clerk in the West Texas division office, Midland, Texas, has been transferred to the Wasson district, Denver City, as assistant district chief clerk.

• South Central Texas

Little Alamo Field's Second Well Finds Deeper Oil Pay

Second well at Little Alamo discovers production; wildcat located in Caldwell County.

McMullen County: Newman Bros. & Skinner & Eddy Corporation's South Texas Syndicate 2-B, second test in the new Little Alamo field, has tested oil in a deeper oil zone. A drill-stem test at 4075-84 feet developed 2 pounds working pressure in 55 minutes and flowed 28-gravity oil, recovering drill stem full of oil. A test at 3958-61 feet developed 555 pounds working pressure through ¼-inch chokes and flowed dry gas. A test at 3963-66 feet developed 400 pounds working pressure in 15 minutes. A test at 3968-71 feet developed 306 pounds working pressure in 26 minutes. The No. 1-B discovery well for the field produces from the Queen City sand at 2286-93 feet. The No. 2-B is 933 feet southwest of this well.

Caldwell County: F. C. Cooper & National Well Servicing Company have located the N. B. Langley 1 as a 2500-foot wildcat 1½ miles northeast of Prairie Lee. Located in Michael Gillan Survey, the well is 470 feet from the southeast line and 330 feet from the northeast line of a 150-acre lease.

• Southwest Texas—Lower Coast

East Peters and South Kohler Areas Have Gas Discoveries

Two gas fields discovered in Duval County; North Minnie Bock outpost installing gas-lift for completion; casing set in wildcat east of Rio Grande City.

Duval County: Rowden & Rowden et al's John W. Akin 2, wildcat 2 miles northeast of the East Peters field and 1014 feet west of the Akin 1 dry hole, has been completed as a gas discovery. On potential the well flowed 8½ million cubic feet of gas daily on open flow with shutin pressure 900 pounds. Total depth is 2458 feet with 5½-inch casing set on bottom and perforated at 2444-47 feet for completion. This well is in GB&CNG RR Survey 186, A-200.

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Another gas discovery is R. Thos. McDermott's Casper Guerra 1, wildcat 2 miles northwest of the South Kohler gas field. From perforations at 2540-45 feet the well flowed gas on 7/32-inch choke with 200 pounds tubing and 400 pounds casing pressure. Total depth is 2596 feet with 5½-inch casing on bottom. The well is 1320 feet from the east line and 1650 feet from the south line of Wm. Meyer Survey 146.

Nueces County: The Atlantic Refining Company's Wisian 1, outpost on the north side of North Minnie Bock field, is installing gas-lift for completion. From perforations at 6098-108 feet the well swabbed oil after tests at 6950-60, 6880-91, 6855-60, 6590-600, and 6570-80 feet all showed salt water.

Starr County: W. B. & Jewel Osborn et al's John Clopton 1, wildcat 6½ miles east of Rio Grande City, has set 5½-inch casing to 6035 feet in preparation for production tests. Total depth is 6256 feet. Shows were indicated at 5609-16,5670-90, and 5710 feet.

Willacy County: The Texas Company was still cutting out junk in the bottom of the hole at Yturria L&LS Company 6, wildcat 8 miles northeast of Raymondville. Total depth is 16,006 feet and the company was preparing to set 4-inch liner on bottom and test a sand just above 16,000 feet when the drill collar stuck at 15,140 feet.

Enlarged Research Program Planned by Gas Association

The executive board and the executive conference of the American Gas Association have approved the recommendations of a special reviewing committee to continue upon an enlarged basis the program of promotion, advertising and research which the gas industry inaugurated in 1944. The new plan calls for the expenditure of approximately $4,800,000 in the next three years, an increase of about $600,000 over the initial program.

Promotional work of the American Gas Association in the present year, including national advertising, special promotional activities, residential and commercial sectional activities and publicity will cost about $1,278,000. These activities supplement and augment those of the gas utility companies which in a normal year spend about $25 million and those of manufacturers representing an additional $10 million.

Approximately $2,240,000 was allocated and spent for national advertising during the first three years of the original plan. In this period, 574 million messages were carried to 127 million readers. It is estimated that $800,000 will be spent on national advertising in the fourth year.

For the first three years of the plan $583,732,000 was allocated and spent for promotional activities. Of this amount it is estimated $213,450 will be recovered through resale of materials. The balance of approximately $229,000 will be used for promotional activities during the fourth year of the expanded plan.

The association's publicity activities covered financial and business news, general association and industry activities, publicity on domestic gas appliances in women's magazines, newspapers and radio, and industrial and commercial coverage in specialized publications and trade magazines.

Gas production research allocations totaled $1,050,000 for the first three-year period, with expenditures amounting to approximately $725,000. It is estimated that $359,000 will be spent in the fourth year.

Allocations for domestic gas research in the first three years of the plan amounted to $450,000, and expenditures total about $435,000. It is estimated that $150,000 will be spent on this type of research in the fourth year.

Appropriations of $150,000 each were allocated for industrial and commercial gas research and general technical research for the three years of the original plan. Approximately $105,000 was spent on industrial and commercial research and it is estimated that an additional $50,000 will be spent in the fourth year of the program.

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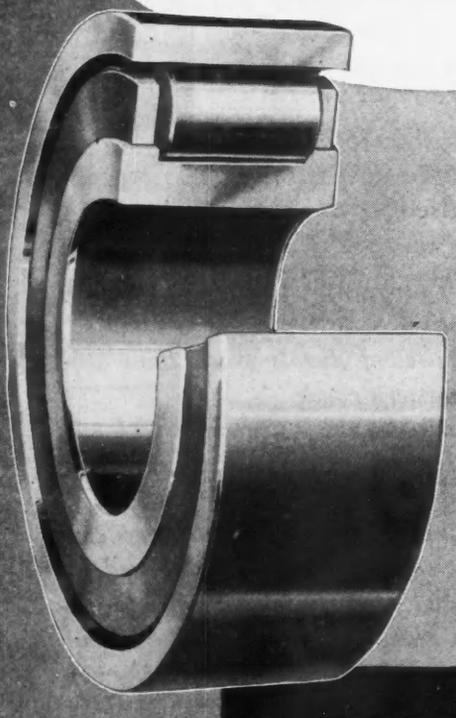

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• Middle Texas Coast

Bloomington Field Production Given Northeast Extension

Production at Bloomington field extended 2500 feet northeast; field discovered 1½ miles north of George West; gas-condensate field discovered 3 miles north of Refugio; Lolita outpost being completed in new sand.

Victoria County: Henshaw Brothers & E. H. Smith's Beulah Stubblefield et al 1 has extended production in the new Bloomington field 2500 feet northeast, being that distance northeast of Amerada Petroleum Corporation's Stubblefield 1 discovery. The producer has been completed for a potential of 137 barrels of oil daily through ⅛-inch choke with gas-oil ratio of 167/1. Total depth is

4664 feet with 5½-inch casing set on bottom and completed in a sand topped at 4620 feet.

Live Oak County: Henderson Coquat & Continental Oil Company's Frank Goodwin 1, wildcat 1½ miles north of George West townsite, is a field discovery, having tested oil in the Slick sand of the Wilcox zone. The Slick was topped at 7397 feet and a drill-stem test at 7397-404 feet, using 1500-foot water cushion and ¼-inch chokes, flowed the cushion in 30 minutes with 25 pounds working pressure and recovered 1900 feet of oil and 200 feet of water. The well was cored ahead for the Luling sand following this test.

Refugio County: La Gloria Corporation & Skelly Oil Company's Jamie Hynes 2, wildcat 3 miles north of Refugio, is a gas-condensate discovery. From perforations at the 6025-foot level the well cleaned gas and condensate on ¼-inch choke with 1965 pounds tubing pressure and 1450 pounds casing pressure. Previously a drill-stem test at 6021-26 feet, using ¼-inch chokes, developed 750 pounds working pressure and recovered 10 feet of condensate and 10 feet of condensate-cut mud. Total depth is 7212 feet.

Jackson County: Humble Oil & Refining Company's Four-Way Ranch 1-D, outpost ½ mile southeast of Lolita field, is being completed in a new deep sand. From perforations at 7865-71 feet the well flowed initially 55 barrels of 48-gravity oil daily with gas-oil ratio of 5507/1. Total depth is 8556 feet with 5½-inch casing set to 8002 feet.

• Upper Texas Coast

Wharton County Wildcat Is Possible Field Discovery

Wharton County wildcat is possible field discovery; 2 producers being completed on Boling Dome southwest flank; Magnolia & Abercrombie to drill 9000-foot extension test at Old Ocean; North Port Neches field outpost dry; Gulf retests North Vidor well.

Wharton County: R. H. Grant & J. P. Petkas' M. F. Rooker 1, wildcat 4 miles northeast of Gobbler Creek field and about the same distance northwest of Hutchins field, is a possible discovery. A sand at 3200-10 feet had oil saturation and sands at 4052-78 and 4232-39 feet had gas and condensate show. The well was drilling at 5500 feet, scheduled to the Vicksburg.

Two producers in the new area off the southwest flank of the Boling Dome are Maynard Smith et al's Johanna Kunshick 1 and Cecil Hagen's A. C. Mick Est. 2. Smith's well, located in Iago townsite, flowed on initial gauge 131 barrels of 29.6-gravity oil daily through ⅛-inch choke with 450 pounds tubing pressure and 750 pounds casing pressure. Total depth is 5341 feet with casing perforated at 5112-24 feet for completion. Hagen's well, 500 feet northwest of the Mick 1 discovery, flowed on potential 184 barrels of 29.6-gravity oil daily through 9/64-inch choke with 700 pounds tubing pressure and 900 pounds casing pressure. Total depth is 5010 feet with casing perforated at 4959-63 feet for completion.

Brazoria County: Magnolia Petroleum Company and J. S. Abercrombie Company have located a 12,000-foot wildcat 9000 feet northeast of production at Old Ocean field. The test is Leon Jordan 1,

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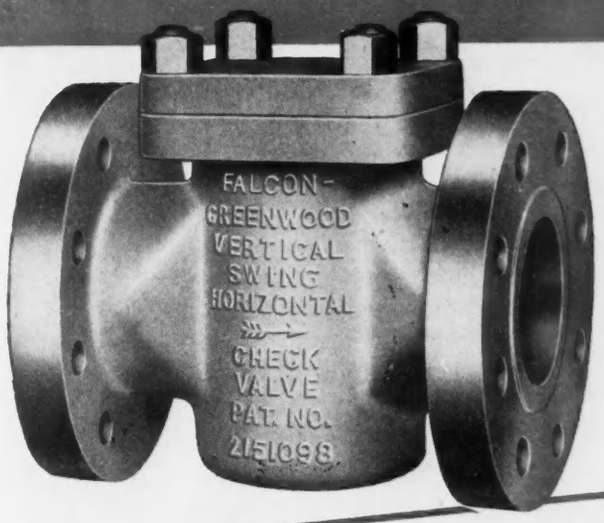

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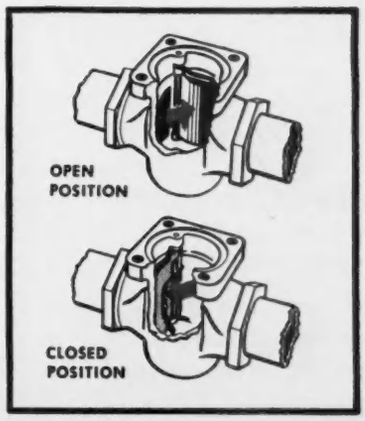

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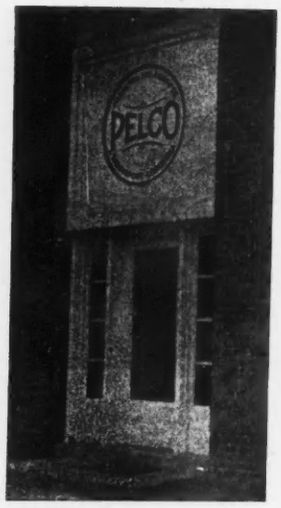

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Orange County: Hinkle Drilling Company's E. E. Langham 1, deep wildcat 2500 feet north of the North Port Neches field, has been abandoned at 9748 feet. The well ran low to producers in the field and the 8800-foot sands carried salt water. This dry hole is in the Jno. Stephenson Survey, Abstract 169.

Gulf Oil Corporation's Miller-Vidor Land Company et al 1, new sand discovery at North Vidor field, has been retested and given a new potential. The well flowed on latest test 99 barrels of 50.1-gravity condensate and 5 million cubic feet of gas daily through ¼-inch choke with tubing pressure 2217 feet and gas - condensate ratio 51,023/1. Total depth is 8010 feet with casing perforated opposite the new sand at 6932-39 feet.

• South Louisiana

Shallow Gas-Producing Pay Tapped in Cameron Parish

Shallow gas-producing area discovered in Cameron Parish; Queen Bess Island wildcat drilling below 15,523 feet; Magnolia makes several tests in Gulf of Mexico wildcat; deep test hits salt at Iowa field.

Cameron Parish: Stanolind Oil & Gas Company's George McManus 1, wildcat 9 miles southwest of Cameron Meadows field in 20-15s-14w, has discovered a shallow gas producing area. On completion the well flowed 1,435,000 cubic feet of gas daily on 12/64-inch choke with 1750 pounds tubing pressure. On ¼-inch choke the well flowed 2,390,000 cubic feet of gas daily with 1500 pounds tubing pressure. Total depth is 9637 feet with 7-inch casing set to 9004 feet. Hole is plugged back to 4510 feet and casing perforated at 4480-88 feet for completion.

Jefferson Parish: The Texas Company's Lafourche Basin Levee District 1, wildcat in the Queen Bess Island area, is drilling below 15,523 feet, greatest depth reached in South Louisiana. The test is scheduled for 16,000 feet.

St. Mary Parish: Magnolia Petroleum Company's State 1, Lease 684, wildcat in the Gulf of Mexico on Block 94, has made several production tests but failed to show commercially. The well confirmed geophysical indications of existence of a shallow salt dome by bottoming in salt at 2613 feet. Tests were made at 2572-75 feet, where traces of oil and gas were recovered, and 2282-84 feet where 1370 feet of salt water and sand were recovered.

Calcasieu Parish: First test to drill into the salt at Iowa field is Magnolia's B. T. Wait 20, located in 12-9s-7w. At 10,107 feet the well drilled into salt. Hole probably will be plugged back for completion in regular field pay sands.

• North Louisiana

Five Wildcats Heading for Nacatoch Sand in Ora Area

New wildcats attempting to define possibilities of Nacatoch sand in Ora area; producers in field combatting salt water successfully.

Union Parish: In order to more closely

evaluate the possibilities of Nacatoch sand and the shaled out conditions reported from wells in the new Ora field area, 5 wildcats have been staked. F. Boykin King and H. C. McCalman are starting Mrs. E. L. Ramsey 1, C NW SW SE 3-21n-1w, 3 miles south of production. Paul E. Parsons et al are completing rigging up at Gordon Taylor 1, C SW NW SE 34-22n-1e, 4 miles south of Conway and on a southeast trend from the Ora field. Fletcher and Sneed are preparing to start R. F. Ward 1, C NE SE NW 30-22n-1w, 4 miles west of production. C. W. Sharp and James E. Kamp Company are rigging up rotary tools for Zollie C. Rabun Estate 1, 28-21n-1w, rank wildcat far from production, about 5 miles west of Farmerville. E. N. Kilpatrick has permit to drill N. E. Compton, Jr., 1, C SW SW NE 2-21n-1w, 3 miles south of the field. Drilling should start at once.

It was agreed by operators at a recent hearing that 10-acre spacing would be followed for the field, and would be necessary to drain the reservoir.

Reports of salt water encroachment in the wells now working in the field are not unfounded but results are not serious so far. R. T. Sellars et al's Monzingo-Rivers Lumber Company 1, NW SE NE 23-22n-1w, had to install heater-treater after salt water inflow, and now is making its daily allowable of 90 barrels of oil, cutting a maximum of 5 percent salt water.

King, McCalman et al's Neva Norris 1, C NW SW NE 26-22n-1w, 1 mile south and ¼ mile west of Ora field, flowed 76 barrels of oil per day on ¼-inch choke. Production is cut with 14 percent salt water. It has made as much as 46 percent salt water but is continuing to flow.

Shell Oil Company's Frost Lumber Company A-1, C SW NE NE 23-22n-1w, north offset to the discovery, flowed a small amount of oil by heads and then swabbed at the rate of 10 barrels of clean oil per hour with no formation water. The well has very little gas volume and pump will be rigged before taking final gauge. Perforations were made at 2148-53 feet in the Nacatoch sand.

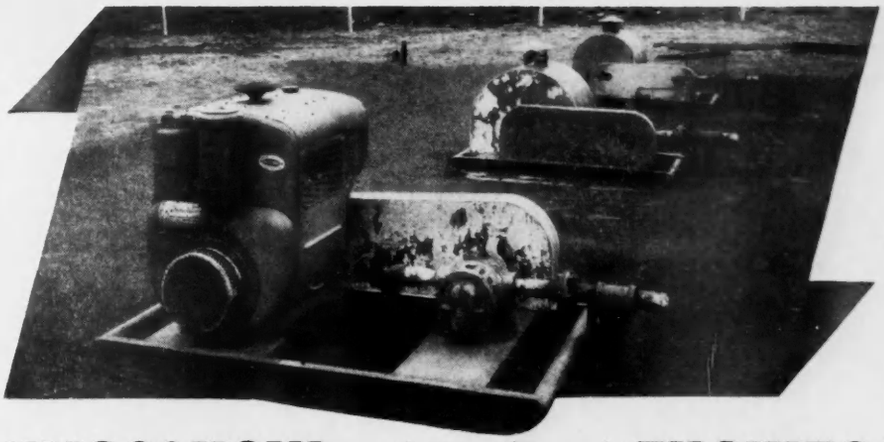
• Arkansas

Completion Gauge Taken on Lafayette County Discovery

Completion gauge has been taken at McAlester Fuel Company's Cap Lee A-1, C NE SW 24-17s-24w, Lafayette County oil discovery 7 miles south of Lewisville. The well flowed 110 barrels of 48.8-gravity oil through ¼-inch choke. Production is through Smackover lime perforations at 9044-50 feet. Total depth is 9086 feet. The well is said to have 19 feet of effective sand, though the area of the new field is believed to be relatively small.

Another failure was reported for the fault-line Spirit Lake field, discovered last year. The Carter Oil Company's C. B. Moore 3, 13-16s-25w, cut a fault to enter the James horizon at 4530 feet, but found Kilpatrick lime possibilities faulted out. It was abandoned at 5005 feet.

Columbia County: Lion Oil Company has plugged back from the Smackover to the Travis Peak horizon to test Warren 1, NW SE 9-16s-22w, in the old Buckner field.



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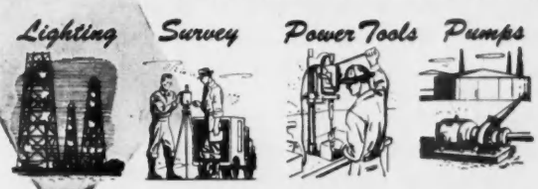

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ONAN ELECTRIC PLANTS

• Mississippi

Prospect in Jones County Continues With Testing

Jones County prospect continues with tests; Mallalieu field extension try has trouble developing production; Gwinville field tests abandoned.

Jones County: Union Sulphur Company's Earline Parker 1, NEc 31-10n-10w, continues with exploratory activities below 5927 feet after coring 7 feet of saturated sand at 5448-55 feet. Subsequent cores at numerous intervals in the Eutaw zone below that depth turned up shows in practically every case although no productive saturation was noted. A drill-stem test at 5710-22 feet recovered 2076 feet of salt water cut with oil and gas in a 10-minute test, with bottom hole foot pressure at 2000 pounds. Cores below 5723 feet recovered shale and sand with considerable salt water and no shows noted. The Parker is a faultline test much like that of the Heidelberg field, and if brought in successfully should show a similar irregular development. Gulf Refining Company's L. L. Majors 1, SEc NE 29-6n-11w, the county's second possible new producer, continues with core tests below 12,417 feet. Some shows have been noted below those recovered at 12,231-41 feet, namely at 12,275-90 and 12,368-70 feet, but none indicates commercial possibilities.

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Chickasaw County: Davidor & Davidor's H. B. Carter 1, NWc SE SW 24-12s-4e, which has shown evidences of gas production, is drilling below 2937 feet with no further shows.

Lincoln County: C. H. Osmond's Grady Jordan 1, NW NE 29-6n-8e, which is undertaking to extend production ½ mile south in the Mallalieu field, is having some trouble in developing production. Casing was perforated at 10,481-94 feet and a drill-stem test recovered a fair amount of oil with some salt water. Perforations were squeezed, but the well tested dry on second attempt. Preparations were being made for further testing.

Attala County: Stanolind Oil & Gas Company's C. E. Steed 1, SE SW 4-13n-6e, wildcat, is drilling below 5436 feet with no shows reported. Last cores reported were at 4474-84 feet and recovered porous white sand with salt water.

Amite County: Gulf's J. A. Rowland Tr. "A" 2, 29-4n-2e, wildcat, is drilling below 5500 feet in a drive for the 12,000-foot zone. The well is ¾ mile northwest of the Rowland A-1, which was finally abandoned at total depth of 11,567 feet after failing to develop what looked like good evidences of commercial production. The well had a small flow of oil from a lower Tuscaloosa sand section at 11349-453 feet but efforts to swab it in were unsuccessful.

Lamar County: Two dusters were abandoned in the Gwinville field with no successful completions. Gulf's J. M. Andrew 4, NWc NE 5-1n-16w, and Gulf-Welch's W. J. Howard "A" 1, NWc 17-1n-16w, failed to establish production in the Tuscaloosa reservoir zone. The Andrew had a little production and after acidizing the section an attempt was made to swab it in but salt water input was too high to make production profitable. The Howard had only a few shows, none encouraging.

Alabama

Daryl Davis' S. H. Bolinger & Company 1, wildcat in NE SE 15-11n-3w, Choctaw County, is drilling below 4475 feet in Tuscaloosa. With Eutaw topped at 3254 feet, cores taken of the section at 3256-76 feet recovered gray mica sand with no shows.

Clarke County: Shell Oil Company's C. C. Brooks 1, NW NE 11-8n-1e, wildcat, is drilling below 4311 feet with no shows.

Marengo County: George Ballio's J. L. Bedsole 1, SEc 18-13n-1e, is running electrical log after reaching total depth of 3400 feet. No shows have been reported.

Florida

Humble Oil & Refining Company's Foremost Properties 1, NE SW 4-6s-25e, Clay County, is drilling below 4706 feet. Cores from 3440-49 feet recovered dolomite. No shows have been indicated.

Palm Beach County: Humble's Tuscon Corporation 1, SWc 35-43s-40e, is drilling below 12,392 feet. No shows have been reported in lower levels.

Putnam County: Sun Oil Company-Seaboard Oil Company's Q. I. Roberts 1-A, NW NW 19-9s-25e, has set surface casing for a test in the northeastern part of the state. The well may go below 5000 feet.

Georgia

T. R. Bradley's Bonny Brown 1, Toombs County, 7 miles south and east of Lyons, is shut down after reaching 2447 feet.

• Rocky Mountain Area

Seven Mile Structure Wildcat Cores Lakota After Testing

Wildcat on Seven Mile Structure, Albany County Wyoming, cores in Lakota after successful drill-stem test; new pay in Badger Basin field indicated; Carter's Great Divide wildcat may be abandoned; Ohio abandons second test of Two Buttes structure in southeastern Colorado.

Wyoming

The California Company and Phillips Petroleum Company are coring in the Lakota section below 6006 feet at their wildcat on the Seven Mile structure, Albany county, 5 miles northwest of the Quealy Dome field. The well is Christiana 1, NE NE SE 8-17n-77w, and on drill-stem test of the Lakota at 5965-67 feet the well made 120 feet of clean oil and 2050 feet of oil-cut water in 30 minutes. Cores at 5957-71 feet showed saturated sand. A week ago tests in the Muddy indicated the well would be a commercial producer from that zone. On drill-stem test at 5821-33 feet the well made 940 feet of oil and 50 feet of drilling fluid in 30 minutes. Drilling is continuing to the Sundance formation, expected within the next 400 feet. The well may be drilled to Tensleep below 8500 feet.

Park County: Production in a new horizon in the Badger Basin field was indicated by a drill-stem test of the Dakota. General Petroleum Corporation's deep test, Badura 2, C NE NW 7-57n-101w, on drill-stem test at 9445-548 feet recovered 47.8-gravity oil at the rate of 10 barrels in 4 hours. The test was taken over a 12-hour period and the well flowed at the end of 8 hours. Casing was cemented at 9445 feet and the well is drilling below 9550 feet to the Tensleep formation at around 11,000 feet. Production has been established in this field from the Frontier formation since 1932, and Resolute Oil Company of Great Falls, Mont., is the principal operator in the field.

Sheridan County: Drilling is continuing at Union Oil Company of California's wildcat on the northwest side of the Power River Basin at Unit 1, CWL NE NW 24-57n-82w, Badger Creek structure. The well was scheduled to test the Dakota (Cretaceous) series at around 8500 feet but at 9300 feet has not encountered this horizon. Correlation on the well has been difficult due to the few tests drilled in this area.

Sweetwater County: The Carter Oil Company's Great Divide Wildcat, west of the Lost Soldier field, may be abandoned at present total depth of 8550 feet. The well is Government 1, C NE NE 13-26n-93w, and is shut down pending decision by Carter officials as to further drilling. No report has been made of formation tops, pending correlation with electrical log surveys.

Washakie County: G & G Drilling Company, (The California Company, Parker Brothers and R. S. Shannon of Denver) were again pulling tubing at their discovery on Neiber Dome anticline in the southern Big Horn Basin. The well is Unit 1, SE NE NW 19-45n-92w, and was drilled to Madison at 10,980 feet, total depth, before it was completed flowing 281 barrels of 42-gravity oil in 9 hours through choke in February of this year. The well has been shut in pending preparation of a

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plastic-coated tubing that would be resistant to the highly corrosive hydrogen sulfide gas produced with the oil. Recently the well was tested, with the specially prepared tubing, and produced at the rate of 825 barrels of oil daily, through tubing choke. After testing for 5 days a leak developed in the tubing and this was being checked before further tests are made.

Colorado

A drill-stem test made By Carter at Unit 1, wildcat in C SE SE 30-8n-90w, North Craig Unit, Moffat county, had a recovery in 1 hours of 15 feet of oil- and gas-cut mud, 30 feet of oil, and 240 feet of fluid, of which 50 percent was oil. The test was made at 7829-48 feet in the Mesaverde. Mesaverde was topped at 5286 feet and the well is now coring below 7869 feet. Shows of gas were encountered in this well in the Fort Union and Lewis formations.

Rio Blanco County: Phillips has started drilling on its wildcat at Poose Creek, 50 miles southwest of Craig. The well is Unit 1, SE NW SE 10-2n-88w, and drilling has been resumed at 6539 feet. This well was spudded in May, 1945, and because of its altitude of 9230 feet and inaccessibility of the area, operations are curtailed to only 4 months drilling each year.

Prowers County: The Ohio Oil Company has abandoned its second test of the Two Buttes structure in southeastern Colorado, and there are now no active drilling operations in the area. The well is Bragg 1, SE SE NW 29-27s-45w, and was drilled to 5372 feet, total depth is the Mississippian.

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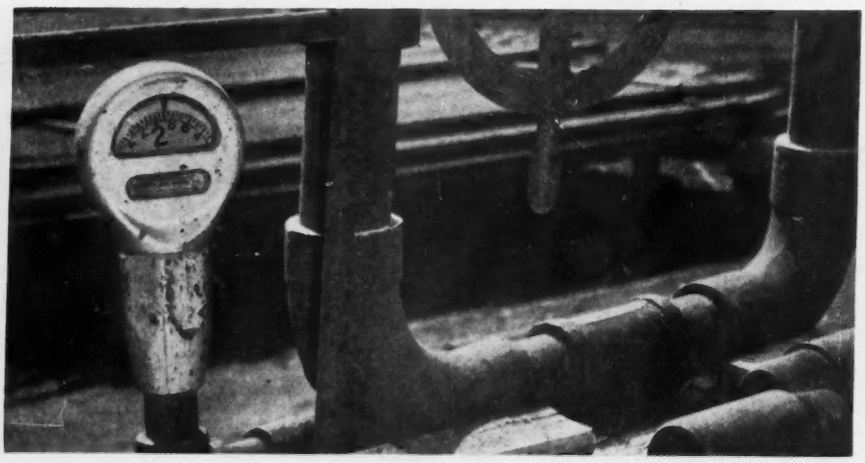

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• California

Shell Makes New Deep Sand Discovery at Long Beach

Shell makes new deep sand discovery at Long Beach; second discovery believed imminent in northwest Athens area of Los Angeles County; 10,000-foot test planned in Huntington Beach field; Sunray makes location for second well on stepout location from new discovery in Santa Barbara County; operations continue on 2 tidelands wildcats.

Los Angeles County: Shell Oil Company has made an important deep sand discovery off the northeast end of the Long Beach field. On a barefoot trial of the interval from the shoe of the 7-inch casing at 10,030 feet to the plug at 10,410 feet, the well flowed at the rate of 1200 barrels gross, 60 percent cut, through 16/64-inch choke. Bottom hole pressure is reported to be 2000 pounds.

The oil is coming from a Miocene sand, presumed to be the De Soto, but this is by no means certain. Deepest commercial production ever obtained in the field was from a well drilled to 10,157 feet by De Soto Oil Company in 1938. This well never produced more than 300 barrels a day and output dropped off rapidly because of its poor structural location. It did, however, indicate the existence of oil at greater depths. Total thickness of the Miocene sediments in the field has not been determined but may exceed 15,000 feet.

The new Shell well is 1300 feet north and 300 feet west from the corner line of Obispo and Hill Streets. It is on the north side of Shell's big Alamitos Land Company lease. Assuming that Shell is able to eliminate the water from the well and that the present oil production rate is sustained, a brisk drilling campaign is foreseen in view of the fact that Long Beach oil is selling at the highest price on record and a good part of that section of the field is cut up into townlots.

Shell is also believed to be on the verge of a discovery northwest of the Athens field. Union Poindexter 1 at Imperial Boulevard and Western Avenue, on the outskirts of Los Angeles, is reported to have cored good oil sand and the company confirms that the well "looks interesting." Total depth is 9272 feet and 7-inch casing has been cemented at 8882 feet. Shell leased the property on which the well is located from Union Oil Company, the latter retaining only a royalty interest.

Brisk interest in the Alondra Park area on the southwest side of Los Angeles continues with the latest entrant being Petrol Corporation which will drill School House 1. It will be directionally drilled 500 feet southeast from the surface location.

Tide Water Associated Oil Company has staked Joughin 1, a wildcat, in the La Llajas area, 25-3n-17w, about 2½ miles west of the Aliso Canyon field. Location is 2 miles south of Standard Oil Company of California's Brady Estate 2-1A, abandoned at 9575 feet in October, 1945.

Orange County: Two wildcats soon will be under way in the Huntington Beach-Newport area. Lawrence P. Kraemer will drill a 10,000-foot test on the old Union Oil Copeland lease in the northern part of the Huntington Beach field in 34-5s-11w.

Santa Barbara County: Sunray Oil

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Corporation has located Los Flores 2709 feet north and 135 feet west of its Los Flores 1 discovery of a new producing area 1 mile southeast of the Orcutt field. The first well continues to perform impressively and is currently flowing 290 barrels of 36.2-gravity oil through 7/64-inch choke with 350 pounds pressure on tubing and 810 pounds on casing.

Operations are continuing on 2 wildcats being drilled on tidelands leases in the Goleta area by Honolulu Oil Corporation. Signal Oil Company and Macco Corporation are jointly interested in both wells.

Fresno County: Standard of California has staked Mitchem 58-12, a wildcat, about 1 mile northwest of the north end of the East Coalinga Extension field in 12-19s-15e.

• Ohio

East Penfield Pool Given Extensions by Large Wells

Lorain County has 2 large gas wells; Medina gas in Bearfield; Hemlock Grove extended; deep test in Noble County.

Lorain County: A large gas well that extended the East Penfield pool ½ mile east was brought in by Ohio Fuel Gas Company on David Simon 1, Lot 49. A natural open flow of 4,175,000 cubic feet was found in an upper Clinton sand lens at 2571-2581 feet. Another good gas well was completed by Ohio Fuel on Edward Miller 1, Lot 98, Pittsfield. Second Clinton sand at 2190-98 feet came in with an open flow of 1,950,000 cubic feet. This well gave the pool a ½-mile north extension.

Perry County: Ohio Fuel's Addie Rogers 1, NE NW 27 Bearfield, showed only 50,000 cubic feet in the Clinton sand at 3804-47 feet and was drilled on down to the Medina. Top of the sand was reached at 3914 and drilled to 3920, where the open flow was 1,125,000 cubic feet natural.

Meigs County: A short but important south extension to the Hemlock Grove pool was completed by Nollem Oil and Gas Company on Waid Bing 2, NE SW 1 Bedford. Berea sand flowed 75 barrels in the first 20 hours after shot. This is now the largest well in the south part of the pool.

Logan County: The Ohio Oil Company's rotary test in McArthur Township is below 2500 feet.

Noble County: A Clinton sand test will be drilled by the Pittsburgh Oil and Gas Company on Lewis Larrick, SW SW 20 Brookfield. Total depth will be about 5200 feet. The test is nearly 8 miles east of the present drilling in Muskingum County.

• Illinois Basin

White County, Illinois, Has Benoist Sand Discovery

White County, Illinois, given new pool; Marion County test proves Omega Dome pool; Shattuc pool gets new pay; Bond County has discovery; Clay County pool opened.

Illinois

Heldt Drilling Company's Endicott 1,

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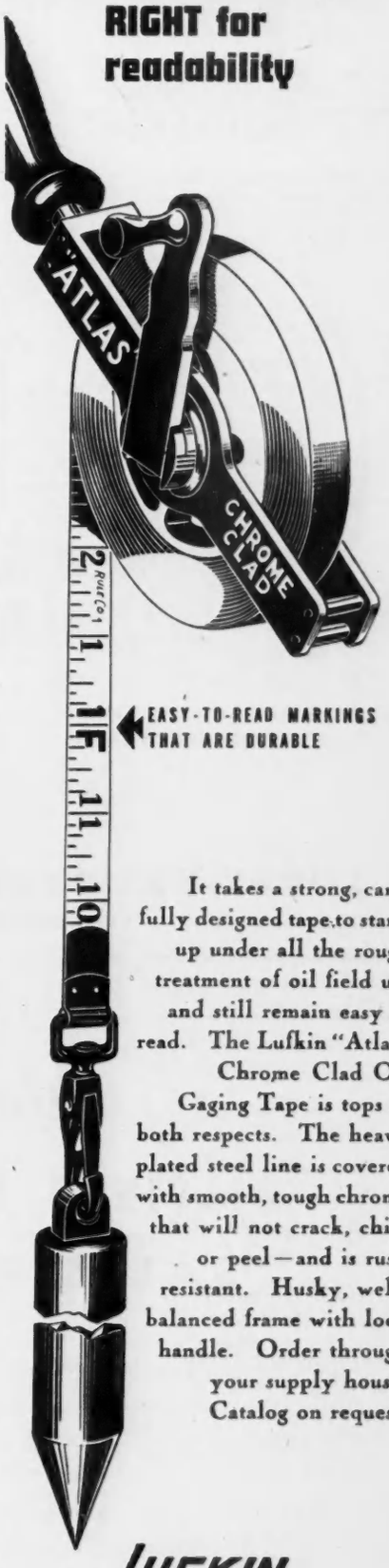

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NW SW NE 28-3s-10e, White County, wildcat approximately 3 miles from present production, swabbed 80 barrels of oil daily after a 30-quart shot in Benoist sand at 2900-3005 feet.

Marion County: Paul Doran and others' Millican 1, NE SE SW 16-3n-4e, is proving the Omega dome pool, with production from McClosky lime at 2486-500 feet. After 5000 gallons of acid through perforations in casing the well began flowing at the rate of 21 barrels of oil hourly. Prior to the acid the well swabbed and flowed 3 barrels per hour.

Clinton County: T. M. Conray's Keister 1, SW SW NW 27-2n-1w, was pumping 50 barrels of oil daily from Paint Creek sand at 1425-40 feet to give the Shattuc pool a new pay horizon. Original production was in the Cypress sand.

Bond County: Leo H. Horton's Kokorduz 1, SW SE NE 21-6n-2w, 2 miles south of the Walburn pool, pumped 50 barrels of oil in 11 hours after 500 gallons of acid in pay at 3150-65 feet.

Clay County: Robinson and Puckett's Colclasure 1, NE NW NE 11-4n-5e, 3 miles south of the Iola pool, pumped 80 barrels of oil in 24 hours from McClosky lime at 2580-85 feet. The well is the discovery of the South Iola pool.

Jefferson County: C. E. Townsend's Watkins 1, NW NE 25-2s-1e, ½ mile north of the Woodlawn pool, swabbed 103 barrels of oil in 24 hours after drilling plug to Bethel sand at 2330-35 feet. Operator is still testing.

Gallatin County: Joe Reznik's Glover 1, NE NE NW 24-7n-9e, swabbed 5 barrels of oil per hour after plug was drilled to Aux Vases sand at 2925-40 feet. The production is a new horizon for the field.

Coles County: B. A. Baker's Hagan 1, SW SW SW 1-12n-7e, northeast side of the Mattoon pool, is the latest Devonian lime test listed as a failure in the area. Total depth of hole was 3181 feet and the Devonian was topped at 3140 feet. No shows were encountered and the well was reported 35 feet structurally lower than a well which showed for production in the area several months ago. Tests may be made on the west side of the structure.

Indiana

H. E. Ledbetter's Elkins 1, NW SW NE 12-1s-12w, Knox County, 2 miles northeast of the Mt. Carmel, Ill., pool, has set pipe to Bethel sand at 2156-64 feet after a drill-stem test yielded 1325 feet of oil and 120 feet of oil-cut mud in an hour.

Elk Hills Reserve Estimated At ½ Billion Barrels

In California for an inspection of the Elk Hills Naval Reserve, Commodore William G. Greenman, Director of Naval Petroleum Reserves, said a conservative estimate of the recoverable oil in the reserve would be ½ billion barrels. He said Elk Hills would be able to produce 100,000 barrels a day in less than six months if opened up. But he denied there was any possibility of producing the reserve at the present time to provide additional oil for the armed force.

"We're saving it for a real emergency," he said.

Commodore Greenman left Los Angeles June 28 for Alaska, where he will show a Congressional delegation the results of exploratory work to date in the Alaska Naval Reserve.

• Michigan

Montcalm County Has Probable Discovery in Winfield Area

Montcalm County has apparent gas discovery southeast of old Winfield field; Newaygo County prospect likely will go to Monroe; 9 rigs running in Kimball Lake field.

Montcalm County: Ashby Oil & Gas Company's Wilson 1, SW NE NE 9-10n-8w, 12 miles southeast of the old Winfield gas field, gauged 2,740,000 cubic feet of gas in the Michigan Stray sand at 1082-88 feet and probably will be completed for a gas discovery.

Newaygo County: Sun Oil Company's Wescott 1, SW SW NW 33-13n-11w, wildcat, logged Dundee section at 2883 feet and carried 75,000 cubic feet gas in the first 5 feet but when drilled 20 feet in section it was showing some water and no oil. Test probably will be carried another 200 feet or more to the Monroe section.

Nine rigs are running in the Kimball Lake field, recently doubled in area to cover an estimated 2000 acres or more, with completions running from 2 to 3 per week in the 2400-foot Traverse zone.

Permits: Thirty-three permits approved by the state for the week included 6 wildcats, 13 field locations and 14 gas storage wells. Five of the field starts were for the Kimball Lake pool in Newaygo County.

• Canada

Northwest Turner Valley Area Given Northwest Extension

Home Oil Company, Canada's top independent producer and owner of the bulk of undrilled proven and prospective oil rights in the northwest Turner Valley area, has extended the proven limits of that field another ⅜ mile northwest with a completion good for more than 20 barrels hourly prior to acidification.

The success is Home-Millarville 26, lsd 15 18-21-3w5th, recently completed at 8970 feet after topping Madison lime at 8541 feet, drilling 110 feet of upper porous at 8650-760 feet and 50 feet of lower porous at 8905-55 feet. Kicked off June 21, the well cleared itself and commenced flowing 41-42-gravity crude. First 12-hour yield was 317 barrels net; next 24 hours, 441 barrels. By June 28, flow was cut back to 319 barrels in 24 hours, the well running with 530 pounds on casing, 285 on tubing, 250 on separator. Initial acid treatment will be applied in the immediate future.

McColl-Frontenac Oil Company (Texas Company affiliate) and Union Oil Company of California team has made a new natural gas discovery in the southeast corner of Alberta, about 14 miles east of the team's Pakowki-Foremost gas field. The discovery, at Manyberries, is McColl-Union 7-13-5-6, lsd 7 13-5-6w4th. A drill-stem test of Bow Island Sand interval at 2520-32 feet gave gas flow at the rate of 4 million cubic feet daily through ½-inch choke, against 900 pounds per square inch flow pressure. After deepening to 2703 feet, seven-inch casing was set to bottom, and will be perforated to open the gas zone.

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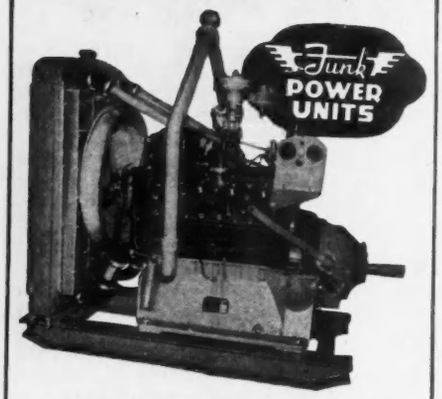

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EXPLORATORY FAILURES

CALIFORNIA WILDCATS

Kern County: Gene Reid Exploration Co.'s Tejon 3, 23-30s-30e, Bena area, abnd 6-25-47 at 1031.

Western Gulf Oil Co.'s Crown Zellerbach 1, 27-25s-24e, Pond area, abnd 6-22-47 at 4130.

Orange County: Rubicon Oil Co.'s Wilcox 1, 6-4n-8w, Santa Ana Canyon area, abnd 6-22-47 at 6325.

Ventura County: Bolsa Chica Oil Corp.'s Bolsa Chica 76-32, 32-5n-18w, Piru Creek area, abnd 6-21-47 at 4652.

Santa Barbara County: General Pet. Corp.'s Dominion 41-14, 14-9n-33w, Cat Canyon area, abnd 6-23-47 at 5071.

COLORADO WILDCATS

Archuleta County: Florence et al Federal 1, ne sw nw 17-33n-1e, Chromo area, Dakota 2430, abnd 6-20-47 at 2511.

Delta County: W. D. Broadhead's Spaulding Bros. 1, c se ne 5-15s-94w, Black Canyon, abnd 6-22-47 at 685.

Huerfano County: Rainbow Drlgs. Capps 2, nw se sw 12-28s-65w, Dakota 477, abnd 6-18-47 at 500.

Prowers County: Ohio's Bragg 1, se se nw 29-27s-45w, Dry Ck 610, Blain 950, Stone Corral 1280, Pennsylvanian 2590, Mississippian 5309, abnd 6-24-47 at 5372.

ILLINOIS WILDCATS

Clay County: J. J. Lynn's Stanford 1, nw nw sw 36-3n-7e, abnd 3132.

Clinton County: Carter's Brink 1, sw nw nw 3-1n-2w, abnd 1605.

Jasper County: Collins Brothers' Mitchell 1, se sw 34-7n-8e, abnd 3110.

Madison County: Ernest Zink's Funk 1, se se nw 32-4n-10w, abnd 1738.

Ernest Zink et al's Washburn 1, ne ne sw 32-4n-10w, abnd 1770.

Montgomery County: C. A. Vandergruegge's Helston 1, se nw 15-8n-4w, abnd 603.

MICHIGAN WILDCATS

Allegan County: Wayne C. Prather's Folsom 1, ne se se 17n-3n-14w, Traverse 1450, abnd 6-27-47 at 1480.

Ottawa County: Rex O&G Co.'s Gray 1, sw ne sw 29-8n-15w, Traverse 1808, abnd 6-26-47 at 1821.

WEST TEXAS WILDCATS

Gaines County: McDaniel - Beecherl Drlg. Co.'s Radford-Phillips 1, c ne ne D&W Ry. 76, blk H, elev 3162 ft., anyhdrite 2250, Yates 3340, brown lime 4410, Grayburg 4710, San Andres 5155, abnd 6-27-47 at 5464.

Pecos County: Ralph Lowe et al's Blakeslee 1, c sw nw GC&SF Ry. 16, blk. 105, elev. 3572 ft. Wolfcamp 5500, Ellenburger 5790, abnd 6-23-47 at 5987.

Pure's Harrison 1, (OWDD) sw sw nw T&P Ry. 203, blk 3, elev 3505, otd 5000, Delaware lime 4260, sand 4282, Bone Spring 6760, Wolfcamp 8630, abnd 6-25-47 at 11,805.

Winkler County: Amon G. Carter Foundation's Wight-Gulf 1, c sw sw PSL 29, blk 40, elev 2949, Yates 2670, Clear Fork 5740, Tubb 6250, base Permian 8090, Mississippian 8940, Woodford 9550, Devonian 9990, Silurian 10,260, Fusselman 10,410, Montoya 10,780, Simpson 11,150, Waddell 11,920, Joins 12,190, Ellen 12,265, abnd 6-28-47 at 12,359.

WEST CENTRAL TEXAS WILDCATS

Concho County: B. H. Nolen-H. O. Newman's Barr 1, 330 snl 990 wel J. F. McCarty sur 2, elev 1554, Cisco 510, Canyon 1570, Strawn 2380, Ellenburger 3046, abnd 6-21-47 at 3337.

Crockett County: Ed. Hyde-W. A. Moncrief & Helmerich & Payne's Helbing-Texaco 1, 361 snl 660 ewl T. T. Ry. 16, blk QR, elev 2488, Clear Fork 1730, Wolfcamp 6445, Strawn 8380, Simpson 8485, Ellenburger 8660, abnd 6-23-47 at 9000.

TEXAS PANHANDLE WILDCAT

Hale County: Glen J. Smith et al's Durrett-Stanolind 1, c se nw HE&WT Ry. 7, blk DT, elev 3441, anhydrite 1571, Blaine 3441, Tubb 5320, Wichita-Albany 5880, abnd 6-19-47 at 6504.

TEXAS PANHANDLE NEW PAY TESTS

Hansford County: Phillips Norton Properties-Elton 1, 2568 snl 2534 ewl GH&H Ry. 155, blk 2, elev 3293, abnd 6-18-47 at 8450 in chert and lime.

Phillip's A. B. Scott-Hiram 1, 1800 nsl 4500 ewl PSL 13, blk 1, elev 3077, base Blaine 1000, Cimarron 1575, Wichita-Albany 2200, Harrington 2714, comp 6-20-47 at 7788, pb 2883 for 4.2 mln gas fr perf regular pay 2720-2870.

NORTH TEXAS WILDCATS

Archer County: L. Ray Dawson's Kinder 1-A, 1600 snl 750 ewl sec 50, blk 5, Clark & Plumb sur, elev 954, Gunsight 1186, abnd 6-7-47 at 1281.

White & Duncan's Maxwell 1, 450 nsl 1300 ewl J. W. Scott sur, abnd 6-8-47 at 1265.

Foard County: G. A. Kneedler et al's Crews 1, nw nw ne H&TC Ry. 274, blk A, elev 1355, abnd 6-22-47 at 2504.

Wichita County: Continental's Cunningham 1, 780 snl 1165 ewl Labor 14 lge 1, Denton CSL, elev 1013, KMA lime 4280, Bend 5332, Barnett 5418, Ellenburger 5525, abnd 6-30-47 at 5684.

Young County: Consolidated Oil Co.'s Gaines 1, 467 out nwc s½ sect 743, TE&L Co, sur, elev 1149, abnd 5-31-47 at 704.

NORTH TEXAS NEW PAY TEST

Young County: Fain-McGaha's Jack 1, 330 out nwc blk 23, Young CSL sur, elev 1066, Gunsight 657, abnd 6-23-47 at 4210.

NORTH CENTRAL TEXAS WILDCATS

Brown County: M. F. Williams Rose Shadid's Nixon 1, 880 wel 1068 nsl nw¼ HT&B Ry. 76, Bend 1953, abnd 6-22-47 at 2507.

Fisher County: H. W. Snowden O&G Co.'s McGee 1, c ne ne T&P Ry. 17 blk 21, elev 2127, Valera 2472-2660, Wolfcamp 2920, base Sedwick 3312, Noodle Creek 3498-3540, base Saddle Creek 3772, Bluff Creek 3815, Flippen 3830, Bend 6309, abnd 6-24-47 at 6329.

Jones County: Nelson Burke Hunt, Trust Est's Threadgill 1330 out swc lot 5, J. W. McKissick Sur., elev 1740, Saddle Creek 2530, Flippen 2562, abnd 6-18-47 at 3477.

Shackelford County: McCarthy O&G Corp.'s Newton 1, 1280 snl 352 ewl sect 57, Bayland Orphan Asylum Lands, elev 1345, Ellenburger 4006, abnd 6-10-47 at 4281.

NORTH CENTRAL TEXAS OUTPOST

Haskell County-Humphrey-Chapman Field: Calstar Pet. Co.'s Foree 1, 1750 snl 330 ewl of s½ R. H. Hall sur 66, 1 mi nw of prod, elev 1518, Palo Pinto 3136, base Canyon 4011, abnd 6-16-47 at 4400.

EAST CENTRAL TEXAS WILDCATS

Denton County: Dall Goodson et al's Hughes 1, 1650 nsl 990 wel 277-ac tr, or 1950 e 900 s of swc B. Rogers sur, but in John Morton sur, Ellenburger 1204, abnd 6-22-47 at 1249.

McLennan County: Lon H. Smith et al's Smith 1, 419 wel 706 snl of 50-ac tr and R. D. Price sur, elev 514, abnd 6-20-47 at 650.

SOUTH CENTRAL TEXAS WILDCAT

Guadalupe County: L. D. Cain's August Broot 1, 3000 fr sl 5800 fr wl J. Cantu sur 15, Navarro 1294, Chalk 1610, abnd 6-15-47 at 2858.

SOUTHWEST TEXAS-LOWER COAST WILDCATS

Kleberg County: Sun's E. G. Canales 5, 5967 w of el sur 336, 1980 n of sl 3294-ac lse, 1150 fr sl 670 fr el A. Gonzales sur 340, abnd 6-19-47 at 11,818.

Starr County: A. & T. Drlg. Co.'s Anna M. Kelsey 1, 660 fr nw&nel blk 9, SK&K sur 71, 640-ac lse, abnd 6-20-47 at 1778.

Lockhart & Co.'s Fee-State 1, 330 fr s&wl sur 923 and 640-ac lse, 1 mi nw Ross fld, abnd 6-21-47 at 5370.

Willacy County: Magnolia-J. S. Abercrombie Co.'s Yturria Cattle Co. 2, 1320 fr nl 660 fr el lot 47, Reynolds sbdn, Las Mestenas Gr, abnd 6-17-47 at 7705.

MIDDLE TEXAS COAST WILDCATS

DeWitt County: Lamar Hunt Trust Est.'s Otto Rathcamp 1, 660 fr el 4000 fr nl K. W. Barton sur, abnd 6-20-47 at 8014.

Karnes County: Geo. Parker's R. M. Korth 1, 565 fr swl 1070 fr sel N. Whitehead sur, abnd 6-18-47 at 6106.

Lavaca County: Providence Oil Co.'s Carrie Smothers 1, 660 fr n&el 180-ac lse and J. R. Foster sur, abnd 6-17-47 at 9000.

Live Oak County: Continental's Buck S. West 1, 660 fr nw&swl tr 1101, blk E, Geo. West Rch sbdn, 2000 fr sel 660 fr swl S. S. Mapes, Jr., sur 232, abnd 5-29-47 at 10,114.

Refugio County: C. G. Glassock et al's Holmes-Heard 1, 330 fr n&el lot 4 blk 8, Refugio town Tr, n flk of old Refugio fld, 240-ac lse, abnd 6-11-47 at 7214.

UPPER TEXAS COAST WILDCATS

Chambers County: Peeler Bros.-Lohman & Gardiner's B. D. Moore Est. 1, 330 fr s&el T&NO sur sect 86 (B. L. Larson Sur. ¾ mi w nearest prod at Alm Bayou, abnd 6-18-47 at 8507.

Colorado County: Shell's John F. White 1, 300 fr sec nw¼ M. Moore sur, Sheridan ne extn area, abnd 6-19-47 at 10,500.

P. R. Haas

John F. Lynch

John F. Lynch has been elected president of La Gloria Corporation, succeeding the late **Robert T. Wilson.** Lynch had been vice president. Other officers elected are **P. R. Haas,** vice president and treasurer; **D. Phillips,** secretary; **T. E. Wilson** and **H. G. Nebeker,** assistant secretaries. **T. S. Scibienski** is vice president in charge of land and lease and drilling. Elected directors are **C. E. Wilson, John J. Sherrin, T. E. Wilson, E. F. Johnson, Binford Arney, Guy C. Kiddoo, John F. Lynch, T. S. Scibienski** and **P. R. Haas.** Lynch also is a director of Carthage Hydrocol, Inc., and president of Reynosa Pipe Line Company of Corpus Christi. La Gloria Corporation is a stockholder in the Hydrocol plant being built at Brownsville for conversion of natural gas into motor fuel and other liquid products.

T. S. Scibienski

»

E. H. Preston has been named office manager for the Buffalo, N. Y., district of Sun Oil Company. He succeeds the late **E. H. Hutchins. Alfred Stevens** has been appointed office manager at Johnstown, replacing Preston.

»

W. H. Morrison, who has been acting production manager for the Shell Oil Company in the Tulsa area for five years, has become special assistant to the Tulsa area manager. **W. H. Burke,** who joined the company in 1933 after graduation from Stanford University with a degree in petroleum engineering, succeeds Morrison.

»

Sherman A. Wengerd has been awarded a Ph.D. in geology from Harvard University after completing a thesis, "Lithologic Variation of the Viola Limestone in South Central Oklahoma," and has returned to his position as geologist in subsurface research for Shell Oil Company at Wichita Falls, Texas.

»

W. H. Esser of Shell Oil Company has been installed as president of the Petroleum Motor Transport Association of Oklahoma.

Thomas P. Simpson, who joined Socony-Vacuum Oil Company in 1925, has been named director of the firm's Research and Development Laboratories at Paulsboro, N. J. Simpson, former assistant director of the laboratories, succeeds **Paul V. Keyser, Jr.,** who was advanced to manager of the Socony-Vacuum lubricating oil department in New York. **Arlie A. O'Kelly** becomes associate director in charge of the chemical division; **G. H. S. Snyder,** assistant director in charge of the lubricating oil division; **Louis P. Evans,** supervisor of the process development division, and **John W. Payne,** associate supervisor.

»

Rex W. Woods will become professor of petroleum engineering and chairman of that department at the University of Kansas, effective September 1. He will succeed **Eugene A. Stephenson,** who has resigned as department chairman because of ill health and will take a year's leave of absence. Woods has been supervisory engineer for Creole Petroleum Corporation in Caracas for two years. From 1936 to 1944 he was with Gulf Oil Corporation, working on reservoir problems, special field studies and development of new fields. Prior to going to Venezuela he was consulting engineer for the Mexican government's oil company.

»

John W. Wagner of Dallas has been named public relations director for the Texas Mid-Continent Oil and Gas Association. A University of Texas graduate, Wagner was a member of the capitol press corps at Austin several years before the war. He enlisted in the Army Air Forces and was discharged as a major after holding public relations assignments in Europe and at Headquarters, Army Air Forces. Prior to joining the Association, Wagner was on the editorial staff of the Dallas *News.*

»

Bill Henry of Tulsa will be land man in charge of the district offices reopened by Shell Oil Company in the Railway Exchange Building, Denver. The Denver district will have supervision over the eastern Colorado and southeastern Wyoming area, with the remainder of the Rocky Mountain Area under supervision of the Casper division.

»

G. B. (Gerry) Shea, petroleum engineer in the Bureau of Mines office in San Francisco, has returned from Japan. For the past eight months Shea has been with the Petroleum Branch of the Mining and Geology Division, Natural Resources Section, G.H.Q.-S.C.A.P., engaged in special technologic and economic studies of the Japanese petroleum industry.

»

T. J. Fitzgerald has joined Oceanic Oil Company as vice president in charge of exploration and geology, with headquarters in Bakersfield, Calif. Fitzgerald was for ten years a Richfield Oil Corporation geologist and engineer in the company's San Joaquin Division.

Condon MacKay has been named manager of the public relations department of The Carter Oil Company, Tulsa. The change will permit **C. D. Watson,** who has served as manager of the department, to devote more time at government hearings and industry conferences. Watson has been with Carter 30 years, serving most of that time in the Tulsa headquarters. He is a director of the company. MacKay was graduated from Yale University in 1924 and entered the employ of Carter as a field landman, later becoming manager of the land department. He has served as assistant manager of the exploration department, assistant to the president, and assistant manager of the public relations department.

Condon MacKay

»

Fred M. Haase, geologist, has resigned from Shell Oil Company to engage in consulting practice with headquarters at New Braunfels, Texas.

»

Hubert Northcutt, former superintendent of the South Texas division for Halliburton Oil Well Cementing Company, has been transferred to Flora, Ill., to become superintendent of the Eastern division. He has had more than 23 years experience in testing, cementing and servicing oil wells. In the winter of 1932-33, he went from East Texas to Houston with the testing department, later to be transferred to Houma, La., as a combination cementer-tester. He returned to Houston to become a field man, then was transferred to Corpus Christi as assistant superintendent of the Gulf Coast division. He subsequently returned to Houston, and when the Gulf Coast division was divided, he was made superintendent of the South Texas division. He will be succeeded by **H. P. Conroy,** former superintendent of the Eastern division, who will be located in Houston as superintendent of the South Texas division. He has been with Halliburton since 1928, having worked throughout the Gulf Coast area and in East Texas. In 1938, he was transferred to the Eastern division, where in 1942 he was made superintendent.

»

H. Travis Brown has resigned as division geologist for Cities Service Oil Company, Bartlesville, Okla., to become general manager of The Geolograph Company, Inc., of Oklahoma City. Brown entered the oil industry in 1930 when he joined the Indian Territory Illuminating Oil Company geological department at Oklahoma City and in 1941 went with Cities Service. In 1945 he went to Bartlesville as division geologist in charge of development in the Mid-Continent area. Brown will make his home in Oklahoma City, headquarters for The Geolograph mechanical well logging service.

Samuel H. Williston has been named vice president and general manager of Sperry-Sun Well Surveying Company, succeeding the late **G. L. Kothny.** Williston was identified with Sperry-Sun at the time of its formation in 1928 and was instrumental in developing the original gyroscopic well surveying instruments. He will continue as vice president and a director of the Cordero Mining Company, Sun Oil subsidiary which has mercury mining operations in Oregon, Nevada and California. Williston joined Sun Oil Company, Sperry-Sun's parent concern, in 1922 as a paleontologist at Maracaibo after having previously served with the Illinois State Geological Survey and as a consulting geologist in Colombia. He became chief geologist for Venezuela-Sun Company in 1925 and the following year was assigned to Sun Oil's Dallas office to engage in electrical geophysical research. He served as a geologist on the West Coast for several years and in 1936 became vice president and general manager of Horse Heaven Mines, Sun mercury mining subsidiary in Oregon. In 1941 he was elected vice president and general manager of Cordero Mining Company. These firms merged in January.

Samuel H. Williston

»

George Vorbe, professor of geology at New Mexico School of Mines, will serve during the summer as geologist in the New Mexico area for Schweer & Hardison, Wichita Falls, Texas.

Randolph L. Griswold, formerly of Jones & Laughlin Supply Company and Frick-Reid Supply Company, has become associated with **Eric G. Schroeder** of Lucey Products Corporation as sales representative in the Dallas office. Griswold is a graduate engineer of Tulane University. He has had extensive oil country supply experience in Texas and Oklahoma. During World War II Griswold served as major in the U. S. Army Air Corps. He also served in the armed forces in World War I.

Randolph L. Griswold

»

O. A. Schilling has been named eastern sales manager of Goodyear Tire & Rubber Company's Mechanical Goods Division. He succeeds **H. D. Foster,** who was recently appointed manager of the Mechanical Goods Division.

»

L. E. Moffatt, assistant to the general manager, Dresser Manufacturing Division, Bradford, Penn., has announced the appointment of Henry H. Paris as exclusive distributor for the new Dresser line of seamless welding ells and fittings in Texas, Arkansas and Louisiana. Paris maintains his office and warehouse at 1125 Rothwell Street, Houston.

»

John R. Johnston was named assistant general manager of sales, Carnegie-Illinois Steel Corporation, Pittsburgh. Johnston has been with the company 22 years.

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Deaths

James C. Graves, 75, Saginaw, Mich., independent oil producer, died June 27. Graves organized the company that drilled the discovery well in the Saginaw field in 1925, the first commercial oil field in Michigan. He had devoted his entire business activities to Michigan oil development since the Saginaw discovery and had played a leading role in the opening of some of the state's biggest fields. He helped organize Basin Oil Company, Goll, Graves & Mechling, Inc., Bay Refining Company, Bay Pipe Line Company, and other oil firms. He was a leader in the extended fight in Michigan to bring about an effective oil control law. He was serving his second three-year term on the State Oil Advisory Board at the time of his death. He was president of the Oil & Gas Association of Michigan in 1944 and 1945 and he was a director of the Independent Petroleum Association of America and a member of The American Petroleum Institute.

James C. Graves

»

Alexander Hannah, 70, of Hannah, Noland, Chambers, Might & Saucier, legal advisers to Imperial Oil, Ltd., interests, died in Calgary, Alberta. He was also a director of Royalite Oil Company, Ltd., and other Imperial subsidiaries.

»

Ray Humphries, 53, northern Oklahoma lease and royalty broker, died in Tonkawa, Okla., June 18.

»

George N. Powell, 70, retired, formerly traffic manager with the Southern group of Pipe Lines in Oil City, Penn., since 1912, died June 12 at Tidioute, Penn.

»

James E. Duffey, 84, pioneer Oklahoma oil operator, died June 28 in Tulsa. He moved to Indian Territory in 1904 and one of his first ventures in the oil business was in fields near Cushing, Okla. He was one of the discoverers of a large oil field near Cleveland, Okla. He had lived in Tulsa since 1906, and was one of the organizers of Western Supply Company.

»

John D. Fralic, 46, Wichita, Kansas, independent operator, died at Wichita June 29.

»

James Henry Smith, 42, drilling superintendent for Prince Brothers Drilling Company and an employe for 20 years, died June 24 at Electra, Texas, of a heart attack.

J. A. Mussler

C. E. Durley

Supervisory Personnel Changes Made by Continental Supply

The Continental Supply Company has announced three changes in supervisory personnel. J. A. Mussler is manager of the Tubular Division. Mussler has been with Continental since July, 1935. Prior to that time he was with Youngstown Sheet and Tube Company in Youngstown and Houston, having entered the company's services in 1923.

Joseph T. Gailus

C. E. Durley has been appointed manager of the Pipe Department, moving into this position from the assistant manager post where he has served since 1927. He joined the Continental organization in 1922.

Joseph T. Gailus has been transferred from the Dallas Pipe Department to manager of Tubular Sales for the Tulsa district with headquarters in Tulsa. Gailus has been with Continental since August, 1939, having served in the Houston area as assistant district manager of tubular sales before moving to the Dallas office.

Manhattan Rubber Gets Award For Advertising Excellence

Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., has received a second award for outstanding excellence of its business magazine advertising in 1946 and 1947. The award was the result of a National Advertising Agency Network competition.

The Manhattan campaign appeared in more than 50 leading business and trade magazines. This marks the 14th award received by Manhattan in the fields of advertising, merchandising and public relations.

Bethlehem Supply Names Personnel For Store to be Opened in Casper

A store will be opened by Bethlehem Supply Company at Casper, Wyo., July 15.

F. D. Cox, formerly store manager at Craig, Colo., has been named store manager. He has one of the longest service records in the company, having been affiliated with the organization since October, 1937.

R. R. Estes, who has been field representative at Casper since October, 1946, will continue in this capacity. The Rocky Mountain district office, under supervision of H. V. Harder, district manager, will be located in the new store building.

Harvester Makes Changes

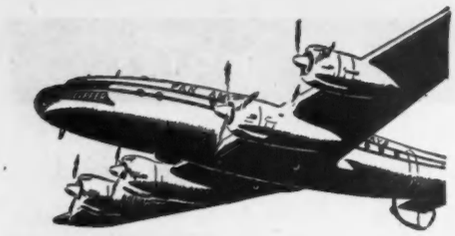
F. E. Reishus, formerly manager at Sioux Falls, S. D., for International Harvester Company, has been transferred to Lincoln, Neb., to succeed J. L. Henn, retired. E. R. Zimmerman, formerly assistant manager at Sioux Falls, has been promoted to branch manager at that point.

Tapecoat Representatives Named

The Tapecoat Company, Evanston, Ill., announces the appointment of James E. Mavor, 514 M & M Building Houston 2, and Gene McIntyre, 727 West 7th Street, Los Angeles 14, to represent Tapecoat pipe joint protection material. Mavor will handle distribution of Tapecoat in the Mid-Continent field through his own representatives, F. P. Kelly, covering Louisiana and East Texas, and Bob Lingle at Corpus Christi. Mr. McIntyre will cover California, Washington, Oregon, Nevada and Arizona.

EXCLUSIVE MID-CONTINENT REPRESENTATIVES: Hunt Tool Company, P. O. Box 1436, Houston, Texas

EXCLUSIVE EXPORT REPRESENTATIVES: Hunt Export Company, 19 Rector Street, New York City, N. Y. • Avda Pte. R. Saenz, Pena 832, Buenos Aires, Argentina



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W. C. Norris Executives Meet

On the 65th Anniversary of the founding of W. C. Norris Manufacturer, Inc., a three-day meeting was held at the company's plant and headquarters offices in Tulsa, during which the field sales executives were shown the latest improvements in W. C. Norris oil tools and equipment. Present were, reading from left to right, top row: Marvin Parker, Odessa; Brooks Schofield, southern Oklahoma; Paul Hagaman, Illinois; Le Roy Mitchell, Tulsa, city salesman. Second row: Les Snelling, Tulsa, city salesman; Jim Bowen, Dallas and East Texas; Cliff Teel, West Texas; Arthur Miller, Louisiana; Cecil Fair, Kansas. Third row: Bill Davidson, sales manager; Buck Tolleson, Kilgore; Red Manis, Wichita Falls; and Jack Schaff, Indiana. Also present was Henry H. Paris, branch manager at Houston.

Hunt Export Appoints South American Representative

Hunt Export Company has appointed A. J. Thomas as a representative in Trinidad, Venezuela, Colombia, Equador and Peru. Thomas formerly headed his own organization, Thomas Well Service, and has spent the last ten years in the oilfields of Trinidad and Venezuela. His headquarters will be Port-of-Spain, Trinidad.

A. D. Bolland, in charge of Hunt Export Company's office in Buenos Aires, will continue to cover the southern part of South America.

National Supply Company Opens Store In Lee County, Virginia

The opening of an oil field supply store by The National Supply Company at Rose Hill, Va., in the middle of the new field in Lee County, in the western tip of the state, is announced by E. N. Smith, division manager. The field is reported to be the first in Virginia to produce oil in any quantity. The oil is of high quality, being classed as Pennsylvania grade.

The new National Supply store is now in full operation with J. Gordon Martin as local manager, under the supervision of J. C. Jett, Kentucky district manager at Paintsville.

HOMCO Opens Stores

Houston Oil Field Material Company has opened branch stores at Brookhaven, Miss., and Bay City, Texas. Frank Watts is the store manager at Bay City, and A. O. Meadows at Brookhaven.

Allis-Chalmers Forms Department For Turbo-Power Development

Formation of a new turbo-power development department in the engineering development division of Allis-Chalmers Manufacturing Company has been announced by W. C. Johnson, executive vice president of the general machinery division.

R. C. Allen, turbine engineer and former head of Allis-Chalmers' steam turbine department, has been named manger and chief engineer of the new department. W. A. Yost, formerly assistant manager, succeeds Allen as manager of the steam turbine department.

Ideco Manager of Sales Promotion Establishes Dallas Headquarters

C. R. Athy, manager, sales promotion, has been transferred to Dallas to handle Ideco's sales promotion from his new headquarters at 1315 Pacific Avenue.

Athy has been with Ideco for 23 years in the capacities of chief engineer and manager of product development.

On South American Tour

Terry Russell, sales engineer for the McEvoy Company, Houston, is on a three-month tour of South American oil fields. In addition to introducing the new McEvoy "Automatic Lubrication" Conduit Gate Valve, Russell will conduct a survey of producing conditions as they apply to his company's wellhead and gas lift equipment.

SQUEAKS from the BULL WHEEL

Bare Facts

"Why did Mahatma Gandhi leave college?"

"Because all the girls wanted his pin."

Good Idea

Stern father (sarcastically): "Say, young man, it's past midnight. Do you think you can stay with my daughter all night?"

"Gosh! I reckon so, sir, if you insist. But I'll have to telephone Mother first."

Hints for Householders

We have it on good authority that the addition of a glass of beer will improve the flavor of a pinch of salt.

New to Trouble

A man pinned underneath his car after an auto accident was being questioned by a policeman.

"Married?"

"No. This is the worst fix I was ever in."

Good Advice

A man was driving an auto with his wife in the back seat and stalled his car on the railroad tracks as the train was approaching. His wife screamed, "Go on —go on!"

"You've been driving all day from the back seat," he answered, "I've got my end across . . . now see what you can do with your end."

Oh, Daddy!

A new bank clerk, dictating, was in doubt to the proper use of a certain phrase, so he said to the stenographer:

"Do you retire a loan?"

"Oh, no, I sleep with Mamma."

He Was It

He was an extra-small Japanese soldier. His uniform hung limp like a scare crow's trappings. A marine on Orote Peninsula asked him why he surrendered.

"My commanding officer told us to fight to the last man," the prisoner answered.

"Well?" queried the marine.

A look of wounded innocence spread over the Jap's face as he declared, "I was the last man!"

Final Test

The barber had cut him, nicked him and gashed him. "Give me a glass of water, please," gasped the victim.

"You aren't going to faint, I hope?" asked the barber in alarm.

"No," replied the victim. "I just want to see if my mouth still holds water."

Versatile Fellow

An asylum patient who had been certified cured was saying good-bye to the director of the institution. "And what are you going to do when you go out into the world?" asked the director.

"Well," said the patient, "I have passed my bar examinations, so I may practice law. I have also had quite a bit of experience in college dramatics, so I might try acting."

He paused for a moment, deep in thought. "Then on the other hand," he continued, "I may be a teakettle."

The Woman's Way

Officer: "Miss, you were doing sixty miles an hour."

Miss: "Oh, isn't that splendid. I only learned to drive yesterday."

Epitaph

Here lies Solomon Peas, under the trees and sod.
Peas is not here—only the pod.
Peas shelled out, and has gone to God.

Ditto

Wife: "Dear, I saw the cutest little hat downtown today."

Husband: "Put it on; let's see how you look in it."

Fair Warning

"How did your horse happen to win the race?"

"Well, I just kept whispering into his ear, 'Roses are red, violets are blue—horses that lose are made into glue'."

Painful Ceremony

Young wife: "Now Bill, I want you to go around to the minister's and arrange for having the baby christened."

Bill (shipyard worker): "You mean to say you are going to let somebody hit the little thing over the head with a bottle?"

Longer Life For Tool Joints Faster, Easier Connections

Ratcliff "Joint Aids" Keep Kelly and Single in Alignment While Connections Are Made.

Sure, your tool joints will last longer with a "Joint Aid" in the mouse-hole . . . Kelly and single are spun up easily and quickly . . . in perfect alignment . . . galling due to misaligned joints is completely eliminated. You save time . . . you save wear and tear on tool joint threads . . . you'll save the cost of a "Joint Aid" on the prevention of one galled tool joint.

Inquire about them . . . they're made for all sizes of pipe and tubing, for any size mouse-hole. No alterations are required in the standard mouse-hole.

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Field production men set the specifications for this new Swab. It does the job they asked for. Large fluid clearances for quick, free dropping. Pulls light or heavy loads from great depths. No fluid loss, complete load each trip. Sensitive rubbers automatically adjust to right wall pressure for weight of load. Rubbers firmly supported yet easily preset to irregular tubing I.D.'s and to compensate for wear. Simple design. Easy to operate on rig floor. Standard cage, ball and seat, replaceable anywhere. Quickly tandemed. Actually cuts swabbing costs and time.

- Large fluid passage.
- Standard reversible ball and seat.
- Rubber quickly changed on job.
- Break here to install rubber.
- Rubber easily adjusted—0.42" under tubing I. D.
- To expand rubber make up on cup.
- Two reinforced PBX Special Rubbers used.
- API threads. Lead compounded for easy break.
- Alloy steel throughout. Heat treated to maximum tensile strength. Rust proofed per Navy specifications.
- Break here to tandem swab.
- Large internal area, streamlined, reduces tendency to blow out of hole.

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931 Russ Bldg., San Francisco 4

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Pressure Maintenance Planned

A plan which permits Sun Oil Company to conduct pressure maintenance operations in the Chapotal sand — the main producing reservoir—of the Yturria field, Starr County, was approved last week by the Texas Railroad Commission. Sun proposes to inject the total casinghead gas production of some 500,000 cubic feet daily through a proposed plant with a capacity of 1,400,000 cubic feet. The injection well is perforated in the gas cap from 4167 to 4187 feet.

Permission to inject casinghead gas into the Pettus oil reservoir in the East field, Jim Hogg County, between the intervals 4695 and 4715 feet also was granted the Sun company. Sun proposes to inject approximately 500,000 cubic feet daily under some 1775 pounds pressure. The proposed plant will have a capacity of approximately 1,375,000 cubic feet.

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